Vol. 1254 Number 4

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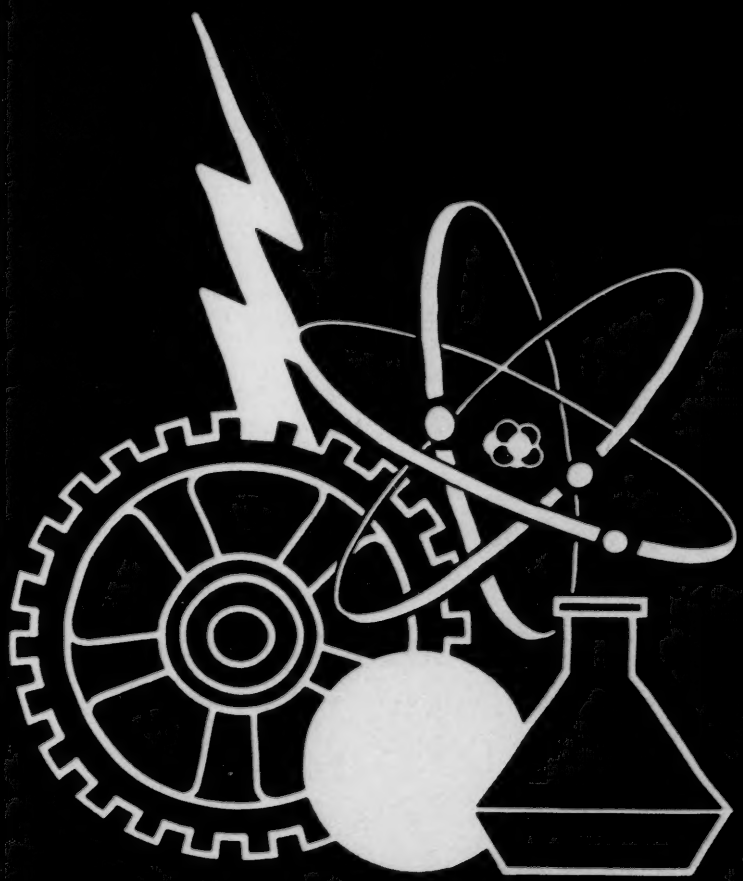
January 22, 2002



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

January 22, 2002 Volume 1254 Number 4

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1251 O.G. 112, on October 23, 2001.

Either the United States Patent and Trademark Office or the European Patent Office may act as the International Searching Authority for an international application filed with the United States Receiving Office or the International Bureau as Receiving Office where at least one of the applicants is either a national or resident of the United States of America.

The European Patent Office may act as the International Preliminary Examining Authority for an international application filed in the United States Receiving Office or the International Bureau as Receiving Office where at least one of the applicants is either a national or resident of the United States of America, provided that the European Patent Office acted as the International Searching Authority.

The search fee of the European Patent Office was increased, effective January 1, 2002, and was announced in the *Official Gazette* at 1253 O.G. 88, on December 25, 2001.

International fees were changed, effective on January 1, 2002, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1253 O.G. 88 on December 25, 2001. A change in the maximum number of designation fees payable, with effect from January 1, 2002, was announced in the *Official Gazette* at 1253 O.G. 88, on December 25, 2001. A change in the reduction for electronic filing, with effect from January 1, 2002, was announced in the *Official Gazette* at 1253 O.G. 88, on December 25, 2001.

Certain domestic PCT fees have been changed, effective October 1, 2001, to adjust certain patent fee amounts to relect fluctuations in the Consumer Price Index. The revisions were announced in the *Official Gazette* at 1249 O.G. 111, on August 28, 2001.

The schedule of PCT fees (in U.S. dollars), as of October 1, 2001, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	$240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	$700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a) and filing fee under 37 CFR 1.16(a) paid)	$450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	$210.00
European Patent Office as ISA	$866.00
International fees	
Basic fee	$407.00
Basic supplemental fee (for each page over 30)	$9.00
Designation fee per country or region	
— For the first 5 national or regional offices designated	$88.00
— For each designation in excess of 5 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	$88.00
— Confirmation fee	$44.00

(A reduction of $125 in the international fees is available in certain cases where PCT-EASY software is used to prepare the request, provided that the necessary conditions are met. See 1217 OG 131 (December 29, 1998)).

International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	$137.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	$490.00
— Additional examination fee, per additional invention (payable only upon invitation)	$140.00
— USPTO was not ISA in PCT Chapter I	$750.00
— Additional examination fee, per additional invention (payable only upon invitation)	$270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	$50.00	$100.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	$355.00	$710.00
USPTO was ISA but not IPEA	$370.00	$740.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	$520.00	$1,040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	$445.00	$890.00
Other National fees		
— For each independent claim in excess of 3	$42.00	$84.00
— For each claim in excess of 20	$9.00	$18.00
— For each application containing a multiple dependent claim	$140.00	$280.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	$65.00	$130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	$130.00	$130.00

November 27, 2001

NICHOLAS P. GODICI
Acting Under Secretary of Commerce for Intellectual Property and Acting Director of the United States Patent and Trademark Office

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 12, 1999 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,857,215 through 5,860,161
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 10, 1995 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,379,459 through 5,381,556
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 8, 1991 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,982,447 through 4,984,298
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents may be submitted electronically over the Internet at www.uspto.gov.

Payments of maintenance fees in patents not submitted electronically over the Internet should be mailed to "United States Patent and Trademark Office, P.O. Box 371611, Pittsburgh, PA 15250-1611".

Correspondence related to maintenance fees other than payments of maintenance fees in patents is not to be mailed to P.O. Box 371611, Pittsburgh, PA 15250-1611, but must be mailed to "Box M Correspondence, "Commissioner of Patents and Trademarks, Washington, DC 20231".

Patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 2001, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.27(a)).....$440.00
By other than a small entity.....$880.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.27(a)).....$1,010.00
By other than a small entity.....$2,020.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.27(a)).....$1,550.00
By other than a small entity.....$3,100.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.27(a)).....$65.00
By other than a small entity.....$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable.....$700.00
(2) unintentional.....$1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED ON November 21, 2001
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,881,275	07/201,946	11/21/89
4,881,283	07/243,067	11/21/89
4,881,284	07/260,936	11/21/89
4,881,288	07/218,631	11/21/89
4,881,291	07/194,103	11/21/89
4,881,294	07/245,129	11/21/89
4,881,303	07/311,859	11/21/89
4,881,308	07/214,513	11/21/89
4,881,319	07/067,648	11/21/89
4,881,321	07/345,383	11/21/89
4,881,329	07/244,035	11/21/89
4,881,339	07/177,092	11/21/89
4,881,346	07/209,178	11/21/89
4,881,350	07/334,606	11/21/89
4,881,353	07/040,893	11/21/89
4,881,355	07/197,622	11/21/89
4,881,356	07/148,357	11/21/89
4,881,358	06/628,745	11/21/89
4,881,360	07/275,730	11/21/89
4,881,367	07/157,942	11/21/89
4,881,369	07/053,741	11/21/89
4,881,377	07/238,299	11/21/89
4,881,384	07/216,274	11/21/89
4,881,387	07/345,417	11/21/89
4,881,392	07/180,911	11/21/89
4,881,393	07/240,069	11/21/89

Patent Number	Serial Number	Issue Date
4,881,412	07/228,781	11/21/89
4,881,414	07/192,187	11/21/89
4,881,420	07/279,655	11/21/89
4,881,426	07/250,449	11/21/89
4,881,430	07/240,504	11/21/89
4,881,432	07/335,486	11/21/89
4,881,434	07/191,643	11/21/89
4,881,448	07/124,989	11/21/89
4,881,463	07/186,451	11/21/89
4,881,475	07/172,373	11/21/89
4,881,479	07/210,149	11/21/89
4,881,495	07/133,305	11/21/89
4,881,502	07/235,674	11/21/89
4,881,503	07/350,241	11/21/89
4,881,516	07/194,221	11/21/89
4,881,517	07/166,385	11/21/89
4,881,533	07/163,869	11/21/89
4,881,547	07/239,061	11/21/89
4,881,550	07/155,917	11/21/89
4,881,563	06/904,167	11/21/89
4,881,564	07/111,183	11/21/89
4,881,567	07/127,396	11/21/89
4,881,571	07/263,173	11/21/89
4,881,572	07/176,641	11/21/89
4,881,577	07/339,320	11/21/89
4,881,579	07/066,701	11/21/89
4,881,580	07/220,631	11/21/89
4,881,595	07/251,247	11/21/89
4,881,599	07/174,557	11/21/89
4,881,602	07/228,984	11/21/89
4,881,612	07/144,974	11/21/89
4,881,618	07/056,685	11/21/89
4,881,620	07/201,216	11/21/89
4,881,626	07/302,037	11/21/89
4,881,627	07/185,407	11/21/89
4,881,632	07/224,738	11/21/89
4,881,635	07/096,965	11/21/89
4,881,640	07/237,581	11/21/89
4,881,651	07/232,326	11/21/89
4,881,655	07/222,409	11/21/89
4,881,659	07/221,359	11/21/89
4,881,664	07/243,695	11/21/89
4,881,667	07/069,760	11/21/89
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4,881,687	07/209,197	11/21/89
4,881,692	07/163,737	11/21/89
4,881,697	07/205,475	11/21/89
4,881,722	07/336,560	11/21/89
4,881,744	07/166,353	11/21/89
4,881,748	07/191,543	11/21/89
4,881,759	07/140,471	11/21/89
4,881,760	07/267,841	11/21/89
4,881,778	07/232,216	11/21/89
4,881,779	07/332,891	11/21/89
4,881,783	07/209,726	11/21/89
4,881,795	07/305,703	11/21/89
4,881,801	07/142,539	11/21/89
4,881,810	07/118,068	11/21/89
4,881,819	07/146,174	11/21/89
4,881,822	07/175,991	11/21/89
4,881,824	07/289,040	11/21/89
4,881,825	07/175,260	11/21/89
4,881,826	07/206,506	11/21/89
4,881,842	07/259,020	11/21/89
4,881,844	07/079,345	11/21/89
4,881,845	07/220,926	11/21/89
4,881,846	07/174,118	11/21/89
4,881,848	07/224,140	11/21/89
4,881,851	07/229,017	11/21/89
4,881,854	07/233,234	11/21/89
4,881,860	07/152,014	11/21/89
4,881,862	07/103,182	11/21/89
4,881,872	07/208,502	11/21/89
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4,881,886	07/194,909	11/21/89
4,881,887	07/302,613	11/21/89
4,881,896	07/255,963	11/21/89
4,881,913	07/346,968	11/21/89
4,881,923	07/127,504	11/21/89
4,881,938	07/017,036	11/21/89
4,881,952	07/249,280	11/21/89
4,881,954	07/080,476	11/21/89
4,881,961	07/198,328	11/21/89
4,881,967	07/202,086	11/21/89
4,881,970	07/102,617	11/21/89
4,881,980	07/071,750	11/21/89
4,881,982	07/185,862	11/21/89
4,881,992	07/168,451	11/21/89
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4,882,005	07/085,274	11/21/89
4,882,007	07/204,995	11/21/89
4,882,009	07/072,518	11/21/89
4,882,019	07/274,005	11/21/89
4,882,023	07/168,055	11/21/89
4,882,038	07/155,696	11/21/89
4,882,039	07/292,691	11/21/89
4,882,040	07/210,949	11/21/89
4,882,042	07/275,829	11/21/89
4,882,043	07/001,384	11/21/89
4,882,046	07/296,505	11/21/89
4,882,049	07/168,788	11/21/89
4,882,053	07/172,519	11/21/89
4,882,056	07/176,865	11/21/89
4,882,058	07/247,245	11/21/89
4,882,059	07/125,388	11/21/89
4,882,067	07/186,562	11/21/89
4,882,074	07/187,758	11/21/89
4,882,081	07/134,412	11/21/89
4,882,093	07/241,622	11/21/89
4,882,096	07/270,666	11/21/89
4,882,101	07/199,147	11/21/89
4,882,108	07/178,940	11/21/89
4,882,111	06/894,497	11/21/89
4,882,119	07/064,649	11/21/89
4,882,121	07/175,629	11/21/89
4,882,126	07/209,977	11/21/89
4,882,128	07/080,037	11/21/89
4,882,146	07/174,407	11/21/89
4,882,147	07/133,524	11/21/89
4,882,165	06/926,877	11/21/89
4,882,176	07/189,309	11/21/89
4,882,179	07/245,335	11/21/89
4,882,186	07/301,619	11/21/89
4,882,189	07/217,317	11/21/89
4,882,194	07/115,552	11/21/89
4,882,203	07/267,538	11/21/89
4,882,212	06/924,970	11/21/89
4,882,214	07/035,266	11/21/89
4,882,215	07/177,346	11/21/89
4,882,222	07/175,790	11/21/89
4,882,223	07/115,625	11/21/89
4,882,227	07/165,905	11/21/89
4,882,248	07/167,954	11/21/89
4,882,264	06/572,646	11/21/89
4,882,270	07/148,133	11/21/89
4,882,272	07/011,963	11/21/89
4,882,276	06/461,308	11/21/89
4,882,291	07/249,189	11/21/89

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4,882,297	07/205,589	11/21/89
4,882,300	07/254,430	11/21/89
4,882,305	07/106,954	11/21/89
4,882,306	06/907,928	11/21/89
4,882,318	07/067,582	11/21/89
4,882,321	07/152,521	11/21/89
4,882,322	07/263,091	11/21/89
4,882,336	07/233,076	11/21/89
4,882,337	07/232,345	11/21/89
4,882,339	07/071,956	11/21/89
4,882,361	07/245,846	11/21/89
4,882,368	07/249,055	11/21/89
4,882,374	07/306,130	11/21/89
4,882,382	07/057,583	11/21/89
4,882,389	07/135,078	11/21/89
4,882,396	07/228,642	11/21/89
4,882,408	07/217,609	11/21/89
4,882,409	07/245,880	11/21/89
4,882,419	06/845,268	11/21/89
4,882,428	07/167,231	11/21/89
4,882,430	07/257,274	11/21/89
4,882,440	07/300,880	11/21/89
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4,882,457	07/208,358	11/21/89
4,882,464	07/251,216	11/21/89
4,882,465	07/103,471	11/21/89
4,882,492	07/145,459	11/21/89
4,882,503	07/248,248	11/21/89
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4,882,509	07/215,325	11/21/89
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4,882,535	06/933,896	11/21/89
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4,882,541	07/190,451	11/21/89
4,882,557	07/120,479	11/21/89
4,882,585	07/169,865	11/21/89
4,882,590	07/195,740	11/21/89
4,882,592	07/306,521	11/21/89
4,882,600	07/334,403	11/21/89
4,882,609	06/798,053	11/21/89
4,882,610	07/254,071	11/21/89
4,882,613	07/259,812	11/21/89
4,882,617	07/134,433	11/21/89
4,882,618	07/302,140	11/21/89
4,882,628	07/299,377	11/21/89
4,882,630	07/195,104	11/21/89
4,882,637	07/209,128	11/21/89
4,882,643	07/341,274	11/21/89
4,882,656	07/258,242	11/21/89
4,882,666	07/328,377	11/21/89
4,882,672	07/338,380	11/21/89
4,882,677	07/092,432	11/21/89
4,882,679	07/126,368	11/21/89
4,882,701	07/249,254	11/21/89
4,882,707	07/316,534	11/21/89
4,882,716	07/300,933	11/21/89
4,882,718	07/154,240	11/21/89
4,882,725	07/150,203	11/21/89
4,882,726	07/123,941	11/21/89
4,882,727	07/024,345	11/21/89
4,882,729	07/225,423	11/21/89
4,882,730	07/126,561	11/21/89
4,882,733	07/025,768	11/21/89
4,882,736	07/195,514	11/21/89
4,882,740	07/160,227	11/21/89
4,882,748	07/251,231	11/21/89
4,882,758	07/111,346	11/21/89
4,882,761	07/159,949	11/21/89
4,882,770	07/132,345	11/21/89
4,882,777	07/040,517	11/21/89

PATENTS WHICH EXPIRED ON November 16, 2001
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
5,261,127	07/784,382	11/16/93
5,261,128	08/033,942	11/16/93
5,261,133	07/906,156	11/16/93
5,261,138	07/804,742	11/16/93
5,261,139	07/980,361	11/16/93
5,261,141	07/938,880	11/16/93
5,261,142	07/799,947	11/16/93
5,261,149	07/973,707	11/16/93
5,261,157	07/643,637	11/16/93
5,261,173	08/000,291	11/16/93
5,261,178	08/009,386	11/16/93
5,261,184	07/713,792	11/16/93
5,261,194	07/739,875	11/16/93
5,261,197	07/807,252	11/16/93
5,261,203	07/785,039	11/16/93
5,261,208	07/958,945	11/16/93
5,261,211	07/721,456	11/16/93
5,261,216	07/723,937	11/16/93
5,261,217	07/986,755	11/16/93
5,261,229	07/923,666	11/16/93
5,261,230	07/979,191	11/16/93
5,261,231	07/861,443	11/16/93
5,261,234	07/817,569	11/16/93
5,261,238	07/802,407	11/16/93
5,261,239	07/840,812	11/16/93
5,261,243	07/951,606	11/16/93
5,261,253	08/003,485	11/16/93
5,261,262	07/844,440	11/16/93
5,261,274	07/528,921	11/16/93
5,261,275	07/758,582	11/16/93
5,261,279	07/840,328	11/16/93
5,261,287	07/880,669	11/16/93
5,261,294	07/415,975	11/16/93
5,261,296	07/913,147	11/16/93
5,261,297	07/958,773	11/16/93
5,261,304	07/976,565	11/16/93
5,261,328	07/715,368	11/16/93
5,261,336	07/732,411	11/16/93
5,261,342	07/919,623	11/16/93
5,261,343	07/866,009	11/16/93
5,261,353	07/863,254	11/16/93
5,261,360	07/923,845	11/16/93
5,261,362	07/985,100	11/16/93
5,261,365	08/032,622	11/16/93
5,261,366	08/028,004	11/16/93
5,261,377	07/940,884	11/16/93
5,261,383	07/963,987	11/16/93
5,261,385	07/858,958	11/16/93
5,261,386	07/880,031	11/16/93
5,261,396	07/846,869	11/16/93
5,261,404	07/726,705	11/16/93
5,261,405	07/934,299	11/16/93
5,261,410	07/651,449	11/16/93
5,261,416	07/912,141	11/16/93
5,261,419	07/795,006	11/16/93
5,261,428	07/682,062	11/16/93
5,261,445	08/005,785	11/16/93
5,261,448	07/871,708	11/16/93
5,261,454	07/982,960	11/16/93
5,261,463	07/834,332	11/16/93
5,261,468	07/951,781	11/16/93
5,261,470	07/710,664	11/16/93
5,261,483	07/821,433	11/16/93
5,261,485	07/747,988	11/16/93

Patent Number	Serial Number	Issue Date
5,261,514	07/878,407	11/16/93
5,261,523	07/991,827	11/16/93
5,261,542	07/933,378	11/16/93
5,261,552	07/669,851	11/16/93
5,261,558	07/993,972	11/16/93
5,261,559	07/836,396	11/16/93
5,261,562	07/820,544	11/16/93
5,261,563	07/940,679	11/16/93
5,261,564	07/797,452	11/16/93
5,261,565	07/897,211	11/16/93
5,261,567	07/997,159	11/16/93
5,261,579	07/950,401	11/16/93
5,261,582	07/969,017	11/16/93
5,261,583	07/880,276	11/16/93
5,261,584	07/862,104	11/16/93
5,261,586	07/858,234	11/16/93
5,261,588	07/886,900	11/16/93
5,261,600	07/984,309	11/16/93
5,261,603	07/919,054	11/16/93
5,261,607	07/957,855	11/16/93
5,261,616	07/836,895	11/16/93
5,261,617	07/906,578	11/16/93
5,261,620	07/837,734	11/16/93
5,261,628	07/832,454	11/16/93
5,261,630	07/802,376	11/16/93
5,261,632	07/770,651	11/16/93
5,261,634	07/954,709	11/16/93
5,261,638	08/028,161	11/16/93
5,261,646	07/762,433	11/16/93
5,261,650	07/774,771	11/16/93
5,261,653	07/948,174	11/16/93
5,261,654	07/926,509	11/16/93
5,261,659	08/011,238	11/16/93
5,261,666	08/029,731	11/16/93
5,261,669	08/027,410	11/16/93
5,261,670	07/860,696	11/16/93
5,261,680	07/837,026	11/16/93
5,261,683	08/005,633	11/16/93
5,261,687	07/817,143	11/16/93
5,261,697	07/854,809	11/16/93
5,261,699	07/959,331	11/16/93
5,261,702	07/832,223	11/16/93
5,261,703	07/997,330	11/16/93
5,261,705	07/858,116	11/16/93
5,261,706	07/504,543	11/16/93
5,261,710	07/928,376	11/16/93
5,261,712	07/935,959	11/16/93
5,261,716	07/934,196	11/16/93
5,261,723	07/920,007	11/16/93
5,261,724	07/976,537	11/16/93
5,261,726	07/783,672	11/16/93
5,261,733	07/889,392	11/16/93
5,261,743	08/053,596	11/16/93
5,261,751	07/920,453	11/16/93
5,261,753	08/059,183	11/16/93
5,261,757	07/770,509	11/16/93
5,261,758	07/918,747	11/16/93
5,261,772	07/775,521	11/16/93
5,261,782	07/693,792	11/16/93
5,261,787	07/822,067	11/16/93
5,261,797	07/830,657	11/16/93
5,261,802	07/942,031	11/16/93
5,261,803	07/698,959	11/16/93
5,261,804	07/736,297	11/16/93
5,261,807	07/840,194	11/16/93
5,261,811	07/737,239	11/16/93
5,261,817	07/944,248	11/16/93
5,261,824	07/819,816	11/16/93
5,261,842	08/009,057	11/16/93
5,261,847	07/784,691	11/16/93
5,261,856	07/990,676	11/16/93
5,261,861	07/894,674	11/16/93
5,261,867	08/051,747	11/16/93
5,261,876	07/899,676	11/16/93
5,261,877	07/734,381	11/16/93
5,261,880	07/850,463	11/16/93
5,261,884	07/875,895	11/16/93
5,261,894	07/850,442	11/16/93
5,261,900	07/782,309	11/16/93
5,261,901	07/695,449	11/16/93
5,261,915	07/869,769	11/16/93
5,261,927	07/994,378	11/16/93
5,261,944	07/898,036	11/16/93
5,261,957	07/861,134	11/16/93
5,261,964	07/862,223	11/16/93
5,261,968	07/819,281	11/16/93
5,261,975	07/903,328	11/16/93
5,261,980	07/824,000	11/16/93
5,261,983	07/901,657	11/16/93
5,261,987	07/894,679	11/16/93
5,261,992	07/474,004	11/16/93
5,261,994	08/022,429	11/16/93
5,261,996	07/646,104	11/16/93
5,262,008	07/623,954	11/16/93
5,262,010	07/846,477	11/16/93
5,262,012	07/584,649	11/16/93
5,262,015	08/024,277	11/16/93
5,262,018	07/743,953	11/16/93
5,262,020	07/994,457	11/16/93
5,262,027	07/674,811	11/16/93
5,262,031	07/834,174	11/16/93
5,262,033	07/842,763	11/16/93
5,262,034	07/966,002	11/16/93
5,262,037	07/887,615	11/16/93
5,262,048	07/945,950	11/16/93
5,262,052	07/848,300	11/16/93
5,262,060	07/845,567	11/16/93
5,262,069	07/831,180	11/16/93
5,262,071	08/020,280	11/16/93
5,262,073	07/928,675	11/16/93
5,262,084	07/819,659	11/16/93
5,262,100	07/806,002	11/16/93
5,262,103	07/795,509	11/16/93
5,262,107	07/860,258	11/16/93
5,262,114	07/932,280	11/16/93
5,262,116	07/878,674	11/16/93
5,262,119	07/874,486	11/16/93
5,262,123	07/710,661	11/16/93
5,262,125	07/961,517	11/16/93
5,262,126	07/848,212	11/16/93
5,262,136	07/778,871	11/16/93
5,262,137	07/766,111	11/16/93
5,262,140	07/878,772	11/16/93
5,262,142	07/922,837	11/16/93
5,262,155	08/028,707	11/16/93
5,262,162	07/755,814	11/16/93
5,262,174	07/732,492	11/16/93
5,262,177	07/007,230	11/16/93
5,262,178	07/668,372	11/16/93
5,262,189	07/955,677	11/16/93
5,262,190	08/017,368	11/16/93
5,262,195	07/958,286	11/16/93
5,262,199	07/870,570	11/16/93
5,262,200	07/859,144	11/16/93
5,262,203	07/895,294	11/16/93
5,262,209	07/947,576	11/16/93
5,262,212	07/880,745	11/16/93
5,262,216	07/925,093	11/16/93
5,262,218	07/908,216	11/16/93
5,262,221	07/773,955	11/16/93
5,262,226	07/664,548	11/16/93
5,262,235	07/783,656	11/16/93
5,262,238	07/987,809	11/16/93
5,262,249	07/813,463	11/16/93

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5,262,265	08/002,101	11/16/93
5,262,266	07/807,921	11/16/93
5,262,277	07/824,088	11/16/93
5,262,296	07/445,624	11/16/93
5,262,303	07/595,451	11/16/93
5,262,306	07/503,829	11/16/93
5,262,309	07/668,517	11/16/93
5,262,329	08/057,212	11/16/93
5,262,334	07/769,529	11/16/93
5,262,342	07/771,891	11/16/93
5,262,346	07/991,222	11/16/93
5,262,349	07/931,368	11/16/93
5,262,355	08/031,502	11/16/93
5,262,359	07/611,088	11/16/93
5,262,362	07/901,649	11/16/93
5,262,366	07/602,851	11/16/93
5,262,367	07/981,704	11/16/93
5,262,372	07/830,794	11/16/93
5,262,382	07/953,407	11/16/93
5,262,385	07/734,698	11/16/93
5,262,390	07/935,601	11/16/93
5,262,391	07/635,628	11/16/93
5,262,392	07/729,668	11/16/93
5,262,395	07/850,475	11/16/93
5,262,400	07/882,809	11/16/93
5,262,401	07/875,314	11/16/93
5,262,403	07/550,827	11/16/93
5,262,409	07/776,065	11/16/93
5,262,411	07/635,441	11/16/93
5,262,415	07/850,817	11/16/93
5,262,416	07/949,903	11/16/93
5,262,420	07/886,300	11/16/93
5,262,427	07/268,940	11/16/93
5,262,429	07/959,843	11/16/93
5,262,432	07/878,557	11/16/93
5,262,433	07/924,453	11/16/93
5,262,445	07/913,374	11/16/93
5,262,446	08/036,855	11/16/93
5,262,453	07/730,217	11/16/93
5,262,455	07/845,135	11/16/93
5,262,456	07/972,081	11/16/93
5,262,459	07/890,107	11/16/93
5,262,462	07/902,399	11/16/93
5,262,468	07/705,711	11/16/93
5,262,474	07/787,709	11/16/93
5,262,476	07/850,335	11/16/93
5,262,482	07/728,853	11/16/93
5,262,494	07/813,221	11/16/93
5,262,500	07/781,616	11/16/93
5,262,503	07/705,585	11/16/93
5,262,505	07/918,293	11/16/93
5,262,507	07/811,276	11/16/93
5,262,508	07/930,134	11/16/93
5,262,509	07/890,734	11/16/93
5,262,522	07/797,556	11/16/93
5,262,528	07/662,198	11/16/93
5,262,531	07/373,467	11/16/93
5,262,534	07/892,641	11/16/93
5,262,538	07/945,076	11/16/93
5,262,539	07/682,820	11/16/93
5,262,543	07/892,975	11/16/93
5,262,544	08/059,929	11/16/93
5,262,554	07/998,323	11/16/93
5,262,555	08/030,900	11/16/93
5,262,557	07/961,829	11/16/93
5,262,558	07/932,845	11/16/93
5,262,561	07/850,910	11/16/93
5,262,564	07/969,874	11/16/93
5,262,570	08/002,904	11/16/93
5,262,588	08/049,688	11/16/93
5,262,590	07/874,713	11/16/93
5,262,593	07/845,059	11/16/93
5,262,606	07/037,434	11/16/93
5,262,609	07/911,823	11/16/93
5,262,617	07/568,730	11/16/93
5,262,622	07/852,276	11/16/93
5,262,634	07/950,245	11/16/93
5,262,636	07/877,746	11/16/93
5,262,648	08/016,097	11/16/93
5,262,653	07/777,563	11/16/93
5,262,657	07/825,365	11/16/93
5,262,674	07/866,951	11/16/93
5,262,680	07/726,456	11/16/93
5,262,682	07/797,930	11/16/93
5,262,692	07/867,834	11/16/93
5,262,698	07/785,679	11/16/93
5,262,701	07/834,026	11/16/93
5,262,706	07/895,736	11/16/93
5,262,708	07/707,589	11/16/93
5,262,710	07/966,629	11/16/93
5,262,717	07/685,666	11/16/93
5,262,721	07/877,136	11/16/93
5,262,725	07/811,560	11/16/93
5,262,726	07/707,744	11/16/93
5,262,734	07/905,777	11/16/93
5,262,735	07/915,251	11/16/93
5,262,739	07/969,503	11/16/93
5,262,744	07/992,794	11/16/93
5,262,748	07/995,576	11/16/93
5,262,749	07/851,838	11/16/93
5,262,758	07/762,446	11/16/93
5,262,762	07/907,883	11/16/93
5,262,768	07/770,454	11/16/93
5,262,769	07/895,633	11/16/93
5,262,784	07/898,654	11/16/93
5,262,792	07/758,881	11/16/93
5,262,813	08/015,526	11/16/93
5,262,817	07/771,205	11/16/93
5,262,835	07/777,311	11/16/93
5,262,838	07/761,856	11/16/93
5,262,839	07/852,549	11/16/93
5,262,847	07/963,874	11/16/93
5,262,848	07/783,367	11/16/93
5,262,856	07/893,454	11/16/93
5,262,885	07/510,069	11/16/93
5,262,890	07/644,371	11/16/93
5,262,910	07/689,555	11/16/93
5,262,914	07/779,221	11/16/93
5,262,918	07/722,837	11/16/93
5,262,921	07/775,979	11/16/93
5,262,923	07/718,604	11/16/93
5,262,926	07/660,496	11/16/93
5,262,953	07/691,001	11/16/93
5,262,960	07/680,694	11/16/93
5,262,967	07/729,566	11/16/93
5,262,968	07/904,315	11/16/93
5,262,980	07/869,407	11/16/93
5,262,981	07/724,035	11/16/93
5,262,992	07/622,066	11/16/93
5,263,006	07/867,703	11/16/93
5,263,023	07/699,341	11/16/93
5,263,025	07/800,248	11/16/93
5,263,042	07/730,464	11/16/93
5,263,044	07/922,731	11/16/93
5,263,058	07/839,091	11/16/93
5,263,063	07/856,259	11/16/93
5,263,064	07/857,489	11/16/93
5,263,070	07/766,077	11/16/93
5,263,073	07/811,305	11/16/93
5,263,074	07/869,506	11/16/93
5,263,082	07/757,265	11/16/93
5,263,085	07/974,751	11/16/93
5,263,112	07/970,193	11/16/93
5,263,123	07/666,923	11/16/93

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5,263,126	07/942,976	11/16/93
5,263,129	07/587,100	11/16/93
5,263,149	07/657,705	11/16/93
5,263,151	07/470,214	11/16/93
5,263,157	07/480,437	11/16/93
5,263,158	07/480,440	11/16/93
5,263,163	07/963,009	11/16/93
5,263,167	07/796,144	11/16/93
5,263,170	07/532,169	11/16/93
5,263,187	07/663,955	11/16/93
5,263,192	07/863,892	11/16/93
5,263,193	07/708,542	11/16/93
5,263,195	07/676,385	11/16/93

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DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
5,687,420	08/666,677	11/18/97
5,687,421	07/872,075	11/18/97
5,687,424	08/661,270	11/18/97
5,687,427	08/667,975	11/18/97
5,687,432	08/589,646	11/18/97
5,687,433	08/670,556	11/18/97
5,687,437	08/600,759	11/18/97
5,687,442	08/660,647	11/18/97
5,687,443	08/516,881	11/18/97
5,687,454	08/658,644	11/18/97
5,687,456	08/694,608	11/18/97
5,687,459	08/378,381	11/18/97
5,687,460	08/530,262	11/18/97
5,687,464	08/575,565	11/18/97
5,687,482	08/512,606	11/18/97
5,687,484	08/622,197	11/18/97
5,687,490	08/690,754	11/18/97
5,687,491	08/592,125	11/18/97
5,687,494	08/419,459	11/18/97
5,687,496	08/431,747	11/18/97
5,687,499	08/536,251	11/18/97
5,687,501	08/613,814	11/18/97
5,687,505	08/680,137	11/18/97
5,687,512	08/646,857	11/18/97
5,687,520	08/671,267	11/18/97
5,687,522	08/351,347	11/18/97
5,687,529	08/659,953	11/18/97
5,687,531	08/388,753	11/18/97
5,687,536	08/607,393	11/18/97
5,687,539	08/683,477	11/18/97
5,687,573	08/656,767	11/18/97
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5,687,744	08/751,750	11/18/97
5,687,747	08/528,240	11/18/97
5,687,749	08/493,653	11/18/97
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5,687,813	08/762,576	11/18/97
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5,687,839	08/607,581	11/18/97
5,687,841	08/559,003	11/18/97
5,687,844	08/599,993	11/18/97
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5,687,873	08/656,918	11/18/97
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5,687,879	08/555,679	11/18/97
5,687,880	08/637,200	11/18/97
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5,687,888	08/705,483	11/18/97
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5,687,893	08/613,342	11/18/97
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5,687,902	08/581,004	11/18/97
5,687,913	08/470,931	11/18/97
5,687,917	08/583,570	11/18/97
5,687,921	08/583,647	11/18/97
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5,687,985	08/334,086	11/18/97
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5,688,021	08/586,459	11/18/97
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5,688,715	08/514,922	11/18/97
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5,688,871	08/406,134	11/18/97
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5,688,894	08/493,183	11/18/97
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5,688,911	08/434,198	11/18/97
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5,688,914	08/150,249	11/18/97
5,688,922	08/466,859	11/18/97
5,688,940	08/595,104	11/18/97
5,688,946	08/277,111	11/18/97
5,688,949	08/133,086	11/18/97
5,688,951	08/613,898	11/18/97
5,688,956	08/515,421	11/18/97
5,688,962	08/649,843	11/18/97
5,688,974	08/759,690	11/18/97
5,688,978	08/440,009	11/18/97
5,688,983	08/614,234	11/18/97
5,688,996	08/618,218	11/18/97
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5,689,013	08/527,319	11/18/97
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5,689,057	08/607,753	11/18/97
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5,689,062	08/584,590	11/18/97
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5,689,083	08/647,336	11/18/97
5,689,085	08/524,260	11/18/97
5,689,086	08/668,609	11/18/97
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5,689,124	08/453,397	11/18/97
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5,689,176	08/693,762	11/18/97
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5,689,192	08/659,221	11/18/97
5,689,194	08/635,360	11/18/97
5,689,204	08/580,415	11/18/97
5,689,206	08/639,687	11/18/97
5,689,231	08/637,451	11/18/97
5,689,237	08/609,811	11/18/97
5,689,240	08/658,708	11/18/97
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5,689,253	08/046,584	11/18/97
5,689,256	08/510,168	11/18/97
5,689,261	08/593,472	11/18/97
5,689,276	08/416,095	11/18/97
5,689,282	07/898,985	11/18/97
5,689,285	08/434,456	11/18/97
5,689,306	08/393,296	11/18/97
5,689,312	08/578,768	11/18/97
5,689,326	08/706,503	11/18/97
5,689,390	08/420,251	11/18/97
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5,689,476	08/441,987	11/18/97
5,689,477	08/541,234	11/18/97
5,689,489	08/551,614	11/18/97
5,689,536	08/770,911	11/18/97
5,689,545	08/573,167	11/18/97
5,689,546	08/463,627	11/18/97
5,689,558	08/623,895	11/18/97
5,689,561	08/540,209	11/18/97
5,689,562	08/682,044	11/18/97
5,689,570	08/607,830	11/18/97
5,689,603	08/088,051	11/18/97
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5,689,740	08/497,464	11/18/97
5,689,752	08/590,159	11/18/97
5,689,758	08/560,508	11/18/97
5,689,779	08/646,568	11/18/97
5,689,780	08/656,805	11/18/97
5,689,798	08/534,535	11/18/97
5,689,811	08/769,871	11/18/97
5,689,813	08/447,346	11/18/97
5,689,821	08/365,309	11/18/97
5,689,822	08/390,685	11/18/97

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee from 12/24/01

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,588,577	06/709,527	03/08/85	05/13/86	12/27/01
5,636,245	08/288,040	08/10/94	06/03/97	12/27/01
5,653,351	08/569,418	12/06/95	08/05/97	12/26/01
5,665,217	08/427,196	04/24/95	09/09/97	12/26/01
5,669,759	08/522,169	07/13/95	09/23/97	12/26/01
5,678,275	08/753,170	11/20/96	10/21/97	12/26/01

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,951,016, Re. S.N. 09/955,591, Aug. 14, 2001, Cl. 273/406, MOVABLE TARGET SYSTEM IN WHICH POWER IS INDUCTIVELY TRANSFORMED TO A TARGET CARRIER, Kyle E. Bateman, Owner of Record: *Inventor,* Attorney or Agent: Angus C. Fox, III, Ex. Gp.: 3711

5,979,538, Re. S.N. 09/962,741, Sep. 25, 2001, Cl. 164/479, CONTINUOUS CHAIN CASTER AND METHOD, Curt Braun, et al., Owner of Record: *Hunter Douglas Industries B.V., Rotterdam, The Netherlands; Fata Hunter, Inc., Riverside, Ca,* Attorney or Agent: Gregory S. Lampert, Ex. Gp.: 1772

6,233,935, Re. S.N. 09/962,992, Sep. 25, 2001, Cl. 060/605, METHOD AND APPARATUS FOR STARTING AN ENGINE HAVING A TURBOCHARGER, Gurinder Singh Kahlon, Owner of Record: *Ford Motor Company, Dearborn, MI,* Attorney or Agent: Kevin G. Mierzwa, Ex. Gp.: 3746

Request for Ex Parte Reexamination Filed

5,755,766, Reexam. C.N. 90/006,157, Requested Date: Dec. 14, 2001, Cl. 607/122, Title: OPEN-ENDED INTRAVENOUS CARDIAC LEAD, Inventor: Stuart R. Chastain, et. al., Owner of Record: *Cardiac Pacemakers, Inc., St. Paul, MN,* Attorney or Agent: Thomas J. Nikolai, Nikolai, Mersereau & Dietz, PA, Minneapolis, MN, Ex. Gp.: 3762, Requester: Finnegan Henderson Farabow Garrett and Dunner, Washington, DC

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within one year before the expiration of the period for which the registration was issued or renewed, or it may be done within six months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
December 29, 2001
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
35,602	70/035,602	12/18/1900
138,291	71/129,229	12/21/1920
278,665	71/300,262	12/23/1930
278,526	71/304,188	12/23/1930
278,568	71/304,916	12/23/1930
383,598	71/432,532	12/17/1940
383,643	71/434,566	12/17/1940
383,668	71/435,406	12/17/1940
534,854	71/528,997	12/19/1950
534,856	71/529,631	12/19/1950
534,872	71/542,915	12/19/1950
534,874	71/543,054	12/19/1950
534,930	71/566,975	12/19/1950
534,963	71/574,813	12/19/1950
535,023	71/585,283	12/19/1950
535,120	71/589,478	12/19/1950
535,060	71/590,642	12/19/1950
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708,592	72/053,975	12/20/1960
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708,625	72/071,932	12/20/1960
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708,860	72/075,526	12/20/1960
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708,793	72/077,546	12/20/1960
708,744	72/077,547	12/20/1960
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708,742	72/096,010	12/20/1960
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708,775	72/096,090	12/20/1960
708,776	72/096,093	12/20/1960
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708,778	72/096,095	12/20/1960
708,647	72/096,374	12/20/1960
708,631	72/096,402	12/20/1960
708,782	72/096,706	12/20/1960
708,712	72/096,975	12/20/1960
708,649	72/096,981	12/20/1960
708,621	72/097,018	12/20/1960
708,676	72/097,155	12/20/1960
708,677	72/097,171	12/20/1960
708,714	72/097,247	12/20/1960
708,783	72/097,388	12/20/1960
708,784	72/097,389	12/20/1960
708,644	72/097,411	12/20/1960
708,734	72/097,435	12/20/1960
708,687	72/097,436	12/20/1960
708,586	72/097,544	12/20/1960
708,727	72/097,836	12/20/1960
708,728	72/097,933	12/20/1960
708,645	72/098,060	12/20/1960
904,568	72/211,215	12/22/1970
904,798	72/294,173	12/22/1970
904,643	72/299,045	12/22/1970
904,644	72/313,965	12/22/1970
904,588	72/316,736	12/22/1970
904,612	72/320,276	12/22/1970
904,907	72/322,171	12/22/1970
904,848	72/324,324	12/22/1970
904,884	72/324,969	12/22/1970
904,530	72/325,194	12/22/1970
904,818	72/326,944	12/22/1970
904,891	72/328,817	12/22/1970
904,652	72/333,078	12/22/1970
904,617	72/336,162	12/22/1970
904,687	72/336,583	12/22/1970
904,586	72/337,031	12/22/1970
904,943	72/337,572	12/22/1970
904,854	72/337,634	12/22/1970
904,573	72/343,300	12/22/1970
904,563	72/343,525	12/22/1970
904,750	72/343,699	12/22/1970
904,550	72/343,951	12/22/1970
904,807	72/345,204	12/22/1970
904,598	72/346,290	12/22/1970
904,639	72/347,241	12/22/1970
904,754	72/347,363	12/22/1970
904,675	72/348,224	12/22/1970
904,912	72/350,045	12/22/1970
904,913	72/350,047	12/22/1970
904,777	72/352,699	12/22/1970
904,726	72/353,725	12/22/1970
904,731	72/355,465	12/22/1970
904,702	72/356,513	12/22/1970
904,582	72/356,514	12/22/1970
904,699	72/359,975	12/22/1970
904,546	72/360,939	12/22/1970

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1,143,957	73/055,048	12/23/1980
1,144,211	73/065,576	12/23/1980
1,144,113	73/085,524	12/23/1980
1,143,918	73/085,534	12/23/1980
1,071,771	73/093,613	08/23/1977
1,144,391	73/114,964	12/23/1980
1,143,919	73/121,388	12/23/1980
1,144,115	73/123,728	12/23/1980
1,144,487	73/124,359	12/23/1980
1,144,332	73/127,832	12/23/1980
1,144,416	73/128,923	12/23/1980
1,144,598	73/131,357	12/23/1980
1,144,470	73/131,464	12/23/1980
1,144,246	73/131,773	12/23/1980
1,144,417	73/134,801	12/23/1980
1,144,394	73/136,326	12/23/1980
1,143,964	73/139,290	12/23/1980
1,143,965	73/140,704	12/23/1980
1,144,169	73/143,222	12/23/1980
1,144,119	73/149,421	12/23/1980
1,143,967	73/150,915	12/23/1980
1,144,466	73/153,239	12/23/1980
1,144,230	73/154,268	12/23/1980
1,143,921	73/155,737	12/23/1980
1,144,039	73/156,529	12/23/1980
1,144,051	73/157,941	12/23/1980
1,144,183	73/158,098	12/23/1980
1,144,554	73/160,124	12/23/1980
1,144,122	73/161,532	12/23/1980
1,144,193	73/161,744	12/23/1980
1,143,886	73/161,877	12/23/1980
1,143,974	73/165,322	12/23/1980
1,144,123	73/167,436	12/23/1980
1,144,252	73/167,513	12/23/1980
1,144,124	73/167,887	12/23/1980
1,144,531	73/168,145	12/23/1980
1,144,041	73/169,549	12/23/1980
1,143,823	73/170,651	12/23/1980
1,143,977	73/171,423	12/23/1980
1,144,458	73/171,790	12/23/1980
1,144,422	73/172,503	12/23/1980
1,144,215	73/173,058	12/23/1980
1,144,216	73/173,059	12/23/1980
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1,144,217	73/173,136	12/23/1980
1,143,840	73/173,258	12/23/1980
1,144,314	73/173,382	12/23/1980
1,144,260	73/173,850	12/23/1980
1,144,184	73/174,279	12/23/1980
1,143,807	73/174,364	12/23/1980
1,144,128	73/174,437	12/23/1980
1,143,889	73/174,816	12/23/1980
1,144,346	73/175,018	12/23/1980
1,144,078	73/176,428	12/23/1980
1,144,079	73/176,751	12/23/1980
1,144,475	73/176,911	12/23/1980
1,144,262	73/177,308	12/23/1980
1,144,173	73/177,438	12/23/1980
1,144,351	73/177,450	12/23/1980
1,143,824	73/177,572	12/23/1980
1,144,562	73/177,652	12/23/1980
1,143,892	73/178,069	12/23/1980
1,144,401	73/178,239	12/23/1980
1,144,563	73/178,396	12/23/1980
1,144,201	73/179,284	12/23/1980
1,143,894	73/179,744	12/23/1980
1,143,984	73/179,745	12/23/1980
1,144,446	73/179,844	12/23/1980
1,144,459	73/180,413	12/23/1980
1,144,564	73/180,511	12/23/1980
1,143,895	73/180,578	12/23/1980
1,144,425	73/180,785	12/23/1980
1,144,354	73/180,883	12/23/1980
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1,143,925	73/182,649	12/23/1980
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1,144,322	73/189,292	12/23/1980
1,144,277	73/189,431	12/23/1980
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1,144,374	73/193,232	12/23/1980
1,143,996	73/193,274	12/23/1980
1,144,208	73/193,917	12/23/1980
1,143,998	73/193,978	12/23/1980
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1,143,863	73/203,520	12/23/1980
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1,144,151	73/204,041	12/23/1980
1,144,153	73/204,561	12/23/1980

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1,143,864	73/205,564	12/23/1980
1,143,866	73/205,800	12/23/1980
1,144,503	73/206,052	12/23/1980
1,144,548	73/206,538	12/23/1980
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1,144,522	73/206,849	12/23/1980
1,143,941	73/206,871	12/23/1980
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1,144,300	73/207,058	12/23/1980
1,143,867	73/207,956	12/23/1980
1,143,868	73/207,957	12/23/1980
1,144,070	73/208,135	12/23/1980
1,144,328	73/208,328	12/23/1980
1,144,484	73/208,602	12/23/1980
1,143,831	73/209,361	12/23/1980
1,144,014	73/209,611	12/23/1980
1,144,015	73/210,610	12/23/1980
1,144,072	73/211,998	12/23/1980
1,144,383	73/212,041	12/23/1980
1,144,406	73/212,434	12/23/1980
1,144,407	73/212,435	12/23/1980
1,144,182	73/212,615	12/23/1980
1,143,819	73/212,628	12/23/1980
1,144,435	73/213,928	12/23/1980
1,143,942	73/214,164	12/23/1980
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1,144,385	73/215,460	12/23/1980
1,143,833	73/215,488	12/23/1980
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1,143,878	73/218,652	12/23/1980
1,144,410	73/218,810	12/23/1980
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1,143,814	73/220,719	12/23/1980
1,143,944	73/220,915	12/23/1980
1,143,815	73/221,192	12/23/1980
1,144,020	73/221,443	12/23/1980
1,143,817	73/222,335	12/23/1980
1,144,073	73/222,788	12/23/1980
1,144,440	73/223,293	12/23/1980
1,143,955	73/223,351	12/23/1980
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1,144,444	73/223,971	12/23/1980
1,144,025	73/225,396	12/23/1980
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1,628,836	73/754,186	12/18/1990
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1,628,347	73/801,579	12/18/1990
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1,627,885	73/813,163	12/18/1990
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1,628,042	73/816,648	12/18/1990
1,628,202	73/817,462	12/18/1990
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1,628,723	73/821,986	12/18/1990
1,627,900	73/822,006	12/18/1990
1,628,047	73/822,073	12/18/1990
1,627,955	73/822,390	12/18/1990
1,628,506	73/822,406	12/18/1990
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1,628,051	73/824,309	12/18/1990
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1,628,055	73/825,605	12/18/1990
1,628,508	73/826,135	12/18/1990
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1,627,936	73/826,656	12/18/1990
1,628,528	73/828,192	12/18/1990
1,628,830	73/828,325	12/18/1990
1,628,569	73/828,706	12/18/1990
1,628,348	73/828,732	12/18/1990
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1,628,068	73/830,199	12/18/1990
1,628,434	73/830,800	12/18/1990
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1,628,072	73/832,333	12/18/1990
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1,628,436	73/832,654	12/18/1990
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1,628,078	73/834,015	12/18/1990
1,628,733	73/834,241	12/18/1990
1,628,437	73/834,688	12/18/1990
1,627,970	73/835,207	12/18/1990
1,627,971	73/835,318	12/18/1990
1,628,191	73/836,321	12/18/1990
1,628,803	74/000,592	12/18/1990
1,628,790	74/002,304	12/18/1990
1,628,265	74/002,865	12/18/1990
1,628,512	74/004,047	12/18/1990
1,628,804	74/004,289	12/18/1990
1,628,513	74/005,930	12/18/1990
1,628,806	74/007,187	12/18/1990
1,628,090	74/007,407	12/18/1990
1,628,091	74/007,441	12/18/1990
1,628,821	74/008,142	12/18/1990
1,628,269	74/012,878	12/18/1990
1,628,640	74/013,513	12/18/1990
1,628,599	74/013,608	12/18/1990
1,628,553	74/015,499	12/18/1990
1,628,601	74/015,712	12/18/1990
1,627,876	74/015,748	12/18/1990
1,628,682	74/016,199	12/18/1990
1,628,740	74/016,305	12/18/1990
1,627,958	74/018,037	12/18/1990
1,628,684	74/018,291	12/18/1990
1,628,171	74/019,656	12/18/1990
1,628,277	74/020,791	12/18/1990
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1,628,404	74/022,218	12/18/1990
1,628,659	74/022,222	12/18/1990

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1,628,642	74/023,072	12/18/1990
1,628,354	74/023,762	12/18/1990
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1,628,279	74/026,085	12/18/1990
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1,628,280	74/027,768	12/18/1990
1,627,915	74/028,270	12/18/1990
1,628,407	74/028,673	12/18/1990
1,628,172	74/029,455	12/18/1990
1,628,127	74/031,427	12/18/1990
1,628,691	74/033,226	12/18/1990
1,628,762	74/033,312	12/18/1990
1,628,693	74/033,313	12/18/1990
1,628,410	74/033,447	12/18/1990
1,628,532	74/033,451	12/18/1990
1,628,694	74/033,922	12/18/1990
1,628,129	74/033,976	12/18/1990
1,627,980	74/034,178	12/18/1990
1,628,764	74/034,731	12/18/1990
1,628,635	74/035,110	12/18/1990
1,627,921	74/035,541	12/18/1990
1,628,357	74/035,884	12/18/1990
1,628,289	74/036,011	12/18/1990
1,628,523	74/036,375	12/18/1990
1,628,489	74/036,404	12/18/1990
1,628,769	74/036,494	12/18/1990
1,628,136	74/036,536	12/18/1990
1,628,326	74/036,866	12/18/1990
1,628,138	74/036,937	12/18/1990
1,628,196	74/037,091	12/18/1990
1,628,241	74/037,462	12/18/1990
1,628,144	74/037,896	12/18/1990
1,627,881	74/038,113	12/18/1990
1,628,652	74/038,284	12/18/1990
1,628,304	74/038,787	12/18/1990
1,628,153	74/039,093	12/18/1990
1,628,306	74/039,662	12/18/1990
1,628,462	74/040,177	12/18/1990
1,628,784	74/040,484	12/18/1990
1,628,812	74/040,654	12/18/1990
1,628,492	74/040,743	12/18/1990
1,628,418	74/041,119	12/18/1990
1,628,162	74/041,328	12/18/1990
1,627,924	74/041,511	12/18/1990
1,628,585	74/041,610	12/18/1990
1,628,311	74/041,672	12/18/1990
1,628,164	74/042,334	12/18/1990
1,628,316	74/042,940	12/18/1990
1,628,179	74/042,948	12/18/1990
1,628,386	74/043,296	12/18/1990
1,628,216	74/043,635	12/18/1990
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1,628,786	74/045,865	12/18/1990
1,628,420	74/050,367	12/18/1990
1,628,704	74/800,008	12/18/1990

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Ronald G. Ameral, Santee, CA, Reg. No. 2,162,024, for the mark JOINT PLUS, Canc. No. 31,638.

Jacksonville Professional Soccer, Inc., Jacksonville, FL, Reg. No. 2,182,210 for the mark JACKSONVILLE CYCLONES, Canc. No. 32,435.

SHIRLEY HASSAN
Paralegal
Trademark Trial and Appeal Board, for
ROBERT M. ANDERSON
Deputy Commissioner for
Trademark Operations

37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of an application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Mr. Owen Parry) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.47(a) and (b). The international application number is PCT/AU99/00404 and was filed on 26 May 1999 in the name of Bruce DAVISON and Owen PARRY for the invention entitled IMPROVED WATER MAINS BYPASS SYSTEM. The national stage application number is 09/700,701 and has a 35 U.S.C. 371 date of 12 April 2001.

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 1
[Docket No.: 010815207-1285-03]
RIN 0651-AB41

Requirements for Claiming the Benefit of Prior-Filed Applications Under Eighteen-Month Publication of Patent Applications

AGENCY: United States Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: In implementing the provisions of the American Inventors Protection Act of 1999 related to the eighteen-month publication of patent applications, the United States Patent and Trademark Office (Office) revised the rules of practice related to requirements for claiming the benefit of a prior-filed application. The Office is now revising the time period for claiming the benefit of a prior-filed application in an application filed under the Patent Cooperation Treaty (PCT), revising the time period for filing an English language translation of a non-English language provisional application, and making other technical corrections to the rules of practice related to eighteen-month publication.

EFFECTIVE DATE: December 28, 2001.

FOR FURTHER INFORMATION CONTACT: Robert A. Clarke or Joni Y. Chang, Legal Advisors, Office of Patent Legal Administration, by telephone at (703) 308-6906, or by mail addressed to: Box Comments—Patents, Commissioner for Patents, Washington, DC 20231, or by facsimile to (703) 872-9399, marked to the attention of Robert A. Clarke.

SUPPLEMENTARY INFORMATION: The American Inventors Protection Act of 1999 was enacted into law on November 29, 1999. See Pub. L. 106-113, 113 Stat. 1501, 1501A-552 through 1501A-591 (1999). The American Inventors Protection Act of 1999 contained a number of changes to title 35, United States Code, including provisions for the publication of pending applications for patent, with certain exceptions, promptly after the expiration of a period of eighteen months from the earliest filing date for which a benefit is sought under title 35, United States Code ("eighteen-month publication"). The Office implemented the eighteen-month publication provisions of the American Inventors Protection Act of 1999 in a final rule published in September of 2000. *See Changes*

to Implement Eighteen-Month Publication of Patent Applications, 65 FR 57023 (Sept. 20, 2000), 1239 *Off. Gaz. Pat. Office* 63 (Oct. 10, 2000) (final rule).

Section 4503(a) of the American Inventors Protection Act of 1999 amended 35 U.S.C. 119(b) to provide that no application for patent shall be entitled to a right of priority under 35 U.S.C. 119(a)-(d) unless a claim identifying the foreign application is filed at such time during the pendency of the application as required by the Office. Section 4503(b) of the American Inventors Protection Act of 1999 amended 35 U.S.C. 119(e) and 120 to provide that no application shall be entitled to the benefit of a prior-filed application unless an amendment containing the specific reference to the prior-filed application is submitted at such time during the pendency of the application as required by the Office. Section 4503 of the American Inventors Protection Act of 1999 also amended 35 U.S.C. 119 and 120 to permit the Office to establish procedures for accepting an unintentionally delayed claim for the benefit of a prior-filed application. Section 4503 of the American Inventors Protection Act of 1999 applies to applications filed under 35 U.S.C. 111 on or after November 29, 2000, and to applications entering the national stage after compliance with 35 U.S.C. 371 that resulted from international applications filed on or after November 29, 2000. See Pub. L. 106-113, § 4508, 113 Stat. at 1501A-566 through 1501A-567. This final rule amends 37 CFR 1.55 and 1.78 to: (1) Revise the requirements for claiming the benefit of a prior-filed application in an application filed under the PCT; (2) revise the time period and requirements for filing an English language translation of a non-English language provisional application; and (3) expressly indicate that the time period requirements which implement the provisions of § 4503 of the American Inventors Protection Act of 1999 do not apply to applications filed before November 29, 2000.

Discussion of Specific Rules

Title 37 of the Code of Federal Regulations, Part 1, is amended as follows:

Section 1.14: Section 1.14(i)(2) is amended to correct its reference to "35 U.S.C. 154(d)(4) (formerly indicated as "35 U.S.C. 154(2)(d)(4)")."

Section 1.55: Section 1.55(a)(1)(i) is amended such that the rules of practice expressly indicate that the time periods in § 1.55(a)(1)(i) do not apply in an application under 35 U.S.C. 111(a) if the application is: (1) an application for a design patent; or (2) an application filed before November 29, 2000. The Office indicated that the changes to § 1.55 (and § 1.78) to implement eighteen-month publication applied only to applications filed on or after November 29, 2000. *See Changes to Implement Eighteen-Month Publication of Patent Applications*, 65 FR at 57024, 1239 *Off. Gaz. Pat. Office* at 63. The Office, however, has received enough inquiries about whether the time periods set forth in § 1.55(a)(1)(i) (and § 1.78(a)(2) and § 1.78(a)(5)) apply to particular applications that the Office has decided to place this information in § 1.55 (and § 1.78) itself.

Section 1.55(c) is amended to expressly indicate that a petition under § 1.55(c) to accept the delayed claim must also be accompanied by the claim (i.e., the claim required by 35 U.S.C. 119(a)-(d) and § 1.55) for priority to the prior foreign application, unless previously submitted.

Section 1.78: Section 1.78(a)(1) is amended to make its provisions applicable to international applications designating the United States of America. The phrase "nonprovisional application" as used in the rules of practice means either an application filed under 35 U.S.C. 111(a) or an international application filed under 35 U.S.C. 363 that entered the national stage after compliance with 35 U.S.C. 371. See § 1.9(a)(3). Thus, provisions which apply only to a nonprovisional application (e.g., the requirement in § 1.78(a)(2)(iii) for a specific reference in an application data sheet (§ 1.76) or the specification) do not apply to any international application that does not enter national stage processing under 35 U.S.C. 371. The specific reference requirements of 35 U.S.C. 119(e) and 120 are met in such an international application by a specific reference to the prior-filed application in the international application papers (e.g., in the Request (PCT Rule 4.10 and § 1.434(d)(2)), or a correction or addition in accordance with PCT Rule 26*bis*).

Section 1.78(a)(2) is amended to place its provisions in separate paragraphs (a)(2)(i) through (a)(2)(iv) for clarity. Section 1.78(a)(2) is also amended to make its provisions applicable to international applications designating the United States of America, and to set forth the time period for making a claim (providing the specific reference required by § 1.78(a)(2)(i)) for both an application filed under 35 U.S.C. 111(a) and an international application designating the United States of America which entered the national stage after compliance with 35 U.S.C. 371.

Specifically, if the later-filed application is an application filed under 35 U.S.C. 111(a), the specific reference required by § 1.78(a)(2)(i) must be submitted within the later of four months from the actual filing date of the later-filed application or sixteen months from the filing date of the prior-filed application. If, however, the later-filed application is a nonprovisional application which entered the national stage from an international application after compliance with 35 U.S.C. 371, the specific reference required by § 1.78(a)(2)(i) must be submitted within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) in the later-filed international application or sixteen months from the filing date of the prior-filed application. This reference must, in any event, be submitted during the pendency of the later-filed application. The provisions relating to an application filed under 35 U.S.C. 111(a) do not change the time period for submitting a specific reference in such applications. The provisions relating to an international application designating the United States of America which entered the national stage after compliance with 35 U.S.C. 371, however, do change the time period for submitting a specific reference to any prior-filed application for which a benefit is claimed in such international applications in that the four-month period is measured from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) rather than the actual filing date of the international application under 35 U.S.C. 363.

Section 1.78(a)(2) is also amended to eliminate the requirement that if the application claims the benefit of an international application, the first sentence of the specification must include an indication of whether the international application was published under PCT Article 21(2) in English. The Office is eliminating this requirement because: (1) The Office will not delay publication of the application if this requirement is not met; and (2) this information can be obtained from other sources.

Section 1.78(a)(2) is also amended such that the rules of practice expressly indicate that the time periods in § 1.78(a)(2)(ii) do not apply if the later-filed application is: (1) An application for a design patent; (2) an application filed under 35 U.S.C. 111(a) before November 29, 2000; or (3) a nonprovisional application which entered the national stage after compliance with 35 U.S.C. 371 from an international application filed under 35 U.S.C. 363 before November 29, 2000. The Office indicated that the changes to § 1.78 to implement eighteen-month publication applied only to applications filed on or after November 29, 2000. *See Changes to Implement Eighteen-Month Publication of Patent Applications*, 65 FR at 57024, 1239 *Off. Gaz. Pat. Office* at 63. The Office, however, has received enough inquiries about whether the time periods set forth in § 1.78 apply to particular applications that the Office has decided to place this information in § 1.78 itself.

Section 1.78(a)(2) is also amended to change the sentence "[t]he identification of an application by application number under this section is the specific reference required by 35 U.S.C. 120 to every application assigned that application number" to "[t]he identification of an application by application number under this section is the identification of every application assigned that application number necessary for a specific reference required by 35 U.S.C. 120 to every such application assigned that application number." That is, a continued prosecution application under § 1.53(d) (CPA) does not require any additional identification of or reference to the prior application (or any prior application assigned the application number of such application under § 1.53(d)) under 35 U.S.C. 120 and § 1.78(a)(2) other than the identification of the prior application in the request required by § 1.53(d) for a CPA. *See Changes to Patent Practice and Procedure*, 62 FR 53131, 53144 (Oct. 10, 1997), 1203 *Off. Gaz. Pat. Office* 63, 73 (Oct. 21, 1997) (final rule). The change to this provision clarifies that the other provisions of § 1.78(a)(2) (e.g., that the claim be in the application data sheet or the first sentence of the specification) remain applicable when an application under § 1.53(b) claims the benefit under 35 U.S.C. 120 of a continued prosecution application filed under § 1.53(d).

Section 1.78(a)(3) is amended to expressly indicate that a petition under § 1.78(a)(3) to accept the delayed claim must also be accompanied by the claim (i.e., the reference required by 35 U.S.C. 120 and § 1.78(a)(2)) to the benefit of the prior-filed application,

unless previously submitted. Section 1.78(a)(3) is also amended to change "paragraph (a)(2)" to paragraph "(a)(2)(ii)" for consistency with the changes to § 1.78(a)(2).

Section 1.78(a)(3) provides that if the reference required by 35 U.S.C. 120 and § 1.78(a)(2) of this section is presented in a nonprovisional application after the time period provided by § 1.78(a)(2)(ii), the claim under 35 U.S.C. 120, 121, or 365(c) for the benefit of a prior-filed copending nonprovisional application or international application designating the United States may be accepted if the applicant files a petition to accept the delayed claim that is accompanied by: (1) the reference required by 35 U.S.C. 120 and § 1.78(a)(2) to the prior-filed application (unless previously submitted); (2) the surcharge set forth in § 1.17(t); and (3) a statement that the entire delay between the date the claim was due under § 1.78(a)(2)(ii) and the date the claim was filed was unintentional.

If an applicant includes a claim to the benefit of a prior-filed nonprovisional application or international application designating the United States elsewhere in the application but not in the manner specified in § 1.78(a)(2)(i) and (iii) (e.g., if the claim is included in an unexecuted oath or declaration or the application transmittal letter) within the time period set forth in § 1.78(a)(2)(ii), the Office will not require a petition (and the surcharge under § 1.17(t)) to correct the claim if the information concerning the claim contained elsewhere in the application was recognized by the Office as shown by its inclusion on a filing receipt. This is because the application will have been scheduled for publication on the basis of the information concerning the claim contained elsewhere in the application within the time period set forth in § 1.78(a)(2)(ii). Of course, the applicant must still submit the claim in the manner specified in § 1.78(a)(2)(i) and (iii) (i.e., by an amendment in the first sentence of the specification or in an application data sheet) to have a proper claim under 35 U.S.C. 120 and § 1.78 to the benefit of a prior-filed application. If, however, an applicant includes such a claim elsewhere in the application and not in the manner specified in § 1.78(a)(2)(i) and (iii), and the claim is not recognized by the Office as shown by its absence on the filing receipt (e.g., if the claim is in a part of the application where priority or continuity claims are not conventionally located, such as the body of the specification), the Office will require a petition (and the surcharge under § 1.17(t)) to correct such claim. This is because the application will not have been scheduled for publication on the basis of the information concerning the claim contained elsewhere in the application.

Section 1.78(a)(4) is amended to make its provisions applicable to international applications designating the United States of America.

Section 1.78(a)(5) is amended to place its provisions in separate paragraphs (a)(5)(i) through (a)(5)(iv) for clarity. Section 1.78(a)(5) is also amended to: (1) Make its provisions applicable to international applications designating the United States of America; (2) set forth the time period for making a claim (providing the specific reference required by § 1.78(a)(5)) for both an application filed under 35 U.S.C. 111(a) and an international application designating the United States of America which entered the national stage after compliance with 35 U.S.C. 371; and (3) change the time period and requirements for filing an English language translation of a non-English language provisional application.

Specifically, if the later-filed application is an application filed under 35 U.S.C. 111(a), the specific reference required by § 1.78(a)(5)(i) must be submitted within the later of four months from the actual filing date of the later-filed application or sixteen months from the filing date of the prior-filed application. If, however, the later-filed application is a nonprovisional application which entered the national stage from an international application after compliance with 35 U.S.C. 371, the specific reference required by § 1.78(a)(5)(i) must be submitted within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) in the later-filed international application or sixteen months from the filing date of the prior-filed application. This reference must, in any event, be submitted during the pendency of the later-filed application. The provisions relating to an application filed under 35 U.S.C. 111(a) do not change the time period for submitting a specific reference in such applications. The provisions relating to an international application designating the United States of America which entered the national stage after compliance with 35 U.S.C. 371, however, do change the time period for submitting a specific reference to any prior-filed application for which a benefit is claimed in such international applications in that the four-month period is measured from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) rather than the actual filing date of the international application under 35 U.S.C. 363.

Section 1.78(a)(5) is also amended such that the rules of practice expressly indicate that the time periods in § 1.78(a)(5)(ii) do not apply if the later-filed application is: (1) an application filed under 35 U.S.C. 111(a) before November 29, 2000; or (2) a nonprovisional application which entered the national stage after compliance with 35 U.S.C. 371 from an international application filed under 35 U.S.C. 363 before November 29, 2000.

Section 1.78(a)(5) is also amended to provide that if a provisional application was filed in a language other than English and an English-language translation of the provisional application and a statement that the translation is accurate were not previously filed in the provisional application or the nonprovisional application, applicant will be notified and given a period of time within which to file an English-language translation of the non- English-language provisional application and a statement that the translation is accurate. In a pending nonprovisional application, failure to timely reply to such a notice will result in abandonment of the application. Thus, § 1.78(a)(5) no longer provides that if a provisional application was filed in a language other than English, a claim to the benefit of such provisional application is waived if an English language translation of a non-English language provisional application is not submitted within the later of four months from the actual filing date of the nonprovisional application or sixteen months from the filing date of the prior-filed provisional application. In the event that the Office schedules an application that claims the benefit of a provisional application filed in a language other than English for publication without issuing a notice requiring the applicant to file English-language translation of the non-English-language provisional application, the applicant should file the English-language translation of the non-English-language provisional application and a statement that the translation is accurate before the scheduled publication date. This change to § 1.78(a)(5) allows applicant to file an English-language translation of a non-English language provisional application either in the provisional application or in each nonprovisional application that claims the benefit of the provisional application.

Section 1.78(a)(5) is also amended to delete the term "copending," as 35 U.S.C. 119(e) no longer requires copendency between a nonprovisional application and a provisional application for the nonprovisional application to claim the benefit of the filing date of the provisional application under 35 U.S.C. 119(e). 35 U.S.C. 119(e)(1) continues to require that any nonprovisional application claiming the benefit of a provisional application be filed within twelve months after the filing date of the provisional application (or the next succeeding business day if the date that is twelve months after the filing date of the provisional application falls on a Saturday, Sunday, or Federal holiday). *See Request for Continued Examination Practice and Changes to Provisional Application Practice*, 65 FR 50092, 50098 (Aug. 16, 2000), 1238 *Off. Gaz. Pat. Office* 13, 18-19 (Sept. 5, 2000) (final rule) (comment 2 and response).

Section 1.78(a)(6) is amended to expressly indicate that a petition under § 1.78(a)(6) to accept the delayed claim must also be accompanied by the claim (i.e., the reference required by 35 U.S.C. 119(e) and § 1.78(a)(5)) to the benefit of the prior-filed provisional application, unless previously submitted. Section 1.78(a)(6) is also amended to change "paragraph (a)(5)" to paragraph "(a)(5)(ii)" for consistency with the changes to § 1.78(a)(5).

Section 1.78(a)(6) provides that if the reference required by 35 U.S.C. 119(e) and paragraph (a)(5) of this section is presented in a nonprovisional application after the time period provided by § 1.78(a)(5)(ii), the claim under 35 U.S.C. 119(e) for the benefit of a prior-filed provisional application may be accepted if the applicant files a petition to accept the delayed claim that is accompanied by: (1) the reference required by 35 U.S.C. 119(e) and § 1.78(a)(5) to the prior-filed provisional application (unless previously submitted); (2) the surcharge set forth in § 1.17(t); and (3) a statement that the entire delay between the date the claim was due under § 1.78(a)(5)(ii) and the date the claim was filed was unintentional.

If an applicant includes a claim to the benefit of a prior-filed provisional application elsewhere in the application but not in the manner specified in § 1.78(a)(5)(i) and (iii) (e.g., if the claim is included in an unexecuted oath or declaration or the application transmittal letter) within the time period set forth in § 1.78(a)(5)(ii), the Office will not require a petition (and the surcharge under §

1.17(t)) to correct the claim if the information concerning the claim contained elsewhere in the application was recognized by the Office as shown by its inclusion on a filing receipt. This is because the application will have been scheduled for publication on the basis of the information concerning the claim contained elsewhere in the application within the time period set forth in § 1.78(a)(5)(ii). Of course, the applicant must still submit the claim in the manner specified in § 1.78(a)(5)(i) and (iii) (i.e., by an amendment in the first sentence of the specification or in an application data sheet) to have a proper claim under 35 U.S.C. 119(e) and § 1.78 to the benefit of a prior-filed provisional application. If, however, an applicant includes such a claim elsewhere in the application and not in the manner specified in § 1.78(a)(5)(i) and (iii), and the claim is not recognized by the Office as shown by its absence on a filing receipt (e.g., if the claim is in a part of the application where priority or continuity claims are not conventionally located, such as the body of the specification), the Office will require a petition (and the surcharge under § 1.17(t)) to correct such claim. This is because the application will not have been scheduled for publication on the basis of the information concerning the claim contained elsewhere in the application.

Section 1.311: Section 1.311(a) is amended to correct the parenthetical reference to "(§ 1.211(f))" to "(§ 1.211(e))."

Section 1.434: Section 1.434(d)(2) is amended by deleting the term "copending," as the prior national application may be a provisional application and 35 U.S.C. 119(e) no longer requires copendency for a nonprovisional application to claim the benefit of the filing date of a provisional application under 35 U.S.C. 119(e).

Section 1.491: The Office proposed amending § 1.491 such that the regulations set forth the current language of 35 U.S.C. 371(b) that defines when national stage commencement occurs. The Office will adopt that proposed change to § 1.491 in a separate final rule that implements an amendment to PCT Article 22.

Response to Comments

The Office published a notice proposing the above-mentioned changes to the rules of practice. *See Requirements for Claiming the Benefit of Prior-Filed Applications Under Eighteen-Month Publication of Patent Applications,* 66 FR 46409 (Sept. 5, 2001), 1251 *Off. Gaz. Pat. Office* 16 (Oct. 2, 2001) (notice of proposed rulemaking). The Office received seven written comments (from intellectual property organizations, patent practitioners, and the general public) in response to the notice of proposed rulemaking. The comments are available for public inspection at the Office of the Commissioner for Patents, located in Crystal Park 2, Suite 910, 2121 Crystal Drive, Arlington, Virginia, and are also posted on the Office's Internet Web site (address: http://www.uspto.gov).

Most of the comments expressed support for the proposed changes. None of the comments opposed the proposed changes, but several comments included additional suggestions. Those comments and the Office's responses follow (comments that generally support the proposed changes are not discussed):

Comment 1: Several comments suggested that the Office make clear that the time period requirements in § 1.78(a)(2)(ii) and § 1.78(a)(5)(ii) (and resulting waiver if these time period requirements are not met) do not apply to applications filed before November 29, 2000. Another comment suggested that the change to § 1.78 be made retroactive to all applications filed on or after November 29, 2000.

Response: Sections 1.55 and 1.78 are now amended to expressly state that the time period requirements of § 1.55(a)(1)(i), § 1.78(a)(2)(ii) and § 1.78(a)(5)(ii) do not apply to applications filed before November 29, 2000. Therefore, there is no waiver of a benefit under 35 U.S.C. 119 or 120 for failure to comply with the time period requirements of § 1.55(a)(1)(i), § 1.78(a)(2)(ii) or § 1.78(a)(5)(ii) in an application filed before November 29, 2000.

Except where the terms of § 1.55 and § 1.78 indicate that a provision of § 1.55 or § 1.78 applies only to applications filed on or after November 29, 2000 (i.e., § 1.55(a)(1)(i), § 1.78(a)(2)(ii), and § 1.78(a)(5)(2)(ii)), the provisions of § 1.55 and § 1.78 as now amended are applicable to applications filed before, on, or after November 29, 2000. For example, both the elimination of the requirement that if the application claims the benefit of an international application, the first sentence of the specification must include an indication of whether the international application was published under PCT Article 21(2) in English (§ 1.78(a)(2)), and the more liberal time period and provisions for filing an English language translation of a non-English language provisional application (§ 1.78(a)(5)), apply to applications filed before, on, or after November 29, 2000. Sections 1.55 and 1.78 as now amended, however, provide that the time period requirements of § 1.55(a)(1)(i), § 1.78(a)(2)(ii) and § 1.78(a)(5)(ii) do not apply to applications filed before November 29, 2000.

Comment 2: Several comments suggested that § 1.78 be amended to state that, if an applicant includes a claim under § 1.78 to the benefit of a prior-filed application elsewhere in the application, but not in the manner specified in § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii), within the time period set forth in § 1.78(a)(2)(ii) or § 1.78(a)(5)(ii), respectively, the Office will not require a petition (and the surcharge under § 1.17(t)) to correct the claim if the information concerning the claim contained elsewhere in the application was recognized by the Office as shown by its inclusion on a filing receipt or in the patent application publication.

Response: The Office has adopted the following practice: if an applicant includes a claim under § 1.78 to the benefit of a prior-filed application elsewhere in the application, but not in the manner specified in § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii), within the time period set forth in § 1.78(a)(2)(ii) or § 1.78(a)(5)(ii), respectively, the Office will not require a petition (and the surcharge under § 1.17(t)) to correct the claim if the information concerning the claim contained elsewhere in the application was recognized by the Office as shown by its inclusion on a filing receipt (not as shown by its inclusion in the patent application publication). The reason for this practice is to avoid the situation in which an applicant is required to file a petition (and pay the surcharge under § 1.17(t)) even though the application was scheduled for publication on the basis of the information concerning the claim contained elsewhere in the application, but not in the manner specified in § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii), within the time period set forth in § 1.78(a)(2)(ii). That is, whether an applicant is required to file a petition (and pay the surcharge under § 1.17(t)) to correct a claim that does not comply with § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii) is based upon the effect the informal claim has on the scheduling of the application for publication, and not whether the informal claim is ultimately included in the patent application publication.

The Office's goal is to encourage applicants to provide claims to the benefit of any prior-filed application in the manner specified in § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii) within the time period set forth in § 1.78(a)(2)(ii) or § 1.78(a)(5)(ii). Amending § 1.78 itself to expressly include the above-stated practice would give tacit approval to providing claim to the benefit of a prior-filed application in a manner that does not comply with § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii). The commentors' proposed amendment to § 1.78 would have an effect contrary to the Office's goal of encouraging applicants to provide claims to the benefit of any prior-filed application in the manner specified in § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii) within the time period set forth in § 1.78(a)(2)(ii) or § 1.78(a)(5)(ii).

Finally, if a claim under § 1.78 does not comply with § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii) (but is stated elsewhere in the application), such claim must eventually be presented in the manner specified in § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii) (i.e., by an amendment in the first sentence of the specification or in an application data sheet) to be a proper claim under 35 U.S.C. 119(e) or 120 and § 1.78 to the benefit of a prior-filed application.

Comment 3: Several comments suggested that the Office should make it clear that if the requirements of § 1.78(a)(2)(ii) have been met, the applicant has not waived priority or continuity benefits even if the priority or continuity claim is not included in the patent application publication.

Response: If a claim under § 1.78 to the benefit of a prior-filed application is stated in the manner specified in § 1.78(a)(2)(i) and (iii) or § 1.78(a)(5)(i) and (iii) within the time period set forth in § 1.78(a)(2)(ii) or § 1.78(a)(5)(ii), the applicant has not waived the claim regardless of whether the Office includes the claim in the patent application publication. Nothing in § 1.78 suggests that the propriety of claim under § 1.78 is dependent upon its inclusion in the patent application publication.

Comment 4: Several comments suggested that the Office should provide applicants with the greatest possible flexibility in satisfying priority claim requirements, and should avoid adding technical requirements that may result in a loss of patent rights. The

comments specifically suggested that since Office employees are familiar with checking the declaration for priority claims, § 1.78(a)(2)(iii) should be further amended to allow the reference required by § 1.78(a)(2)(i) to be included in the declaration.

Response: The Office allows applicants to provide claims under § 1.78 to the benefit of any prior-filed application either in the first line of the specification (where § 1.78 formerly required such a claim to be) or in an application data sheet (§ 1.76). Providing even this level of flexibility hinders the patent application publication and patent printing process when the specification and application data sheet (§ 1.76) contain conflicting information. Providing the oath or declaration under § 1.63 as an additional possible location for claims under § 1.78 to the benefit of any prior-filed application would result in confusion in situations in which: (1) the applicant has submitted multiple oaths or declarations under § 1.63; or (2) information submitted in the oath or declaration conflicts with information submitted in the specification or the application data sheet (§ 1.76). Providing the oath or declaration under § 1.63 as an additional possible location for claims to the benefit of any prior-filed application would also cause problems in the situation in which it is desirable to delete a claim to the benefit of a prior-filed application (for patent term purposes), in that a substitute oath or declaration not containing the claim would be necessary to eliminate a claim if such claim is made by a statement in the oath or declaration (§ 1.63).

Comment 5: Several comments suggested that the Office should take all steps necessary to ensure that all proper priority or benefit claims are included in the first paragraph of the patent application publication.

Response: The applicant and application information (i.e., inventor names, including order, title, priority/benefit, assignee name) that is in the Office's Patent Application Locating and Monitoring (PALM) system at the time the application content is extracted from the Office's Patent Application Capture and Review (PACR) database for publication will be reflected on the front page of the patent application publication. Thus, if an application is filed without any priority or benefit claim, but a priority or benefit claim is subsequently submitted before the application content has been extracted for publication, the priority or benefit claim will be reflected on the front page of the patent application publication. The application content is currently extracted for publication approximately nine weeks before the projected publication date. The time period in § 1.55(a)(1), § 1.78(a)(2)(ii), and § 1.78(a)(5)(ii) for submitting a priority or continuity claim is four months from the actual filing date of the application or sixteen months from the filing date of the prior-filed application, which does not appear to expire until after the time at which application content is extracted for publication. As a practical matter, however, this time period will expire before the time at which application content is extracted for publication (and, as such, any timely priority or continuity claim should be entered into the Office's PALM system before the time at which application content is extracted for publication) because the failure to state a priority or continuity claim before a publication date is originally calculated will result in projected publication date that is later than the projected publication date would have been if such priority or continuity claim were taken into account.

If an untimely claim under § 1.78 to the benefit of a prior-filed application is accepted under § 1.78(a)(3) or § 1.78(a)(6) after the application content has been extracted for publication purposes, the Office plans to correct its electronic records relating to the patent application publication such that the claim under § 1.78 will be reflected on the Office's electronic records of the patent application publication (the eighteen-month publication process does not involve the creation of paper-based records).

Finally, while priority and continuity claims will be reflected on the front page of the patent application publication, continuity claims under § 1.78 will not additionally be stated on the first line of the specification unless the claim is included in the first line of the specification as originally filed or as filed in a copy of the application submitted by the Office electronic filing system under § 1.215(c). Specifically, claims under § 1.78 will not additionally be stated on the first line of the specification if the claim is included in a preliminary amendment to the specification (see § 1.215(c) (the patent application publication will not include any amendments, including preliminary amendments, unless applicant supplies a copy of the application containing the amendment pursuant to § 1.215(c))) or in an application data sheet (cf. *Changes to Implement the Patent Business Goals*, 65 FR 78958, 78959 (Dec. 18, 2000), 1242 *Off. Gaz. Pat. Office* 65 (Jan. 9, 2001) (final rule and correction) ("If continuity data is included in an application data sheet, but not in the first sentence of the specification, the continuity data to be set forth in the application data sheet will not be printed in the first line of the specification in the patent")).

Comment 6: One comment questioned whether there is any mechanism for correcting the absence of a priority claim in an international application if an applicant files the international application designating the United States of America, but subsequently files a continuation application that claims the benefit of the international application and the international application never enters the national stage under 35 U.S.C. 371.

Response: The requirement that a claim to the benefit of a prior-filed provisional application, a prior-filed nonprovisional application, or a prior-filed international application designating the United States be submitted within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) in the later-filed international application or sixteen months from the filing date of the prior-filed application does not apply to an international application that never entered the national stage under 35 U.S.C. 371. Therefore, to amend the later-filed international application to add a claim to the benefit of a prior-filed provisional application, a prior-filed nonprovisional application, or a prior-filed international application designating the United States, the applicant need only file a petition under § 1.182 to amend an abandoned application (the later-filed international application) with the claim to the benefit of a prior-filed application (regardless of whether the later-filed international application was filed in the United States Receiving Office).

Comment 7: Several comments supported the proposed change by which the Office would issue a notice in a nonprovisional application claiming the benefit of a non-English language provisional application that sets a time period within which the English translation must be filed, but noted that if the Office fails to issue such a notice and the applicant does not provide such a translation before publication, the burden will fall on applicants against whom the resulting patent application publication is cited as a reference to obtain a translation of the provisional application.

Response: The Office plans to check during the preexamination processing of a nonprovisional application to determine whether the nonprovisional application claims the benefit of a provisional application that was filed in a language other than English and, if so, whether an English-language translation of the provisional application was filed in the provisional application. If the nonprovisional application claims the benefit of a provisional application that was filed in a language other than English and no English-language translation of the provisional application was filed in the provisional application, the Office will issue a notice requiring the applicant to timely file an English-language translation and a statement that the translation is accurate. If the Office schedules an application that claims the benefit of a provisional application filed in a language other than English for publication without issuing a notice requiring the applicant to file an English-language translation of the non- English-language provisional application, the applicant should file the English-language translation of the non-English-language provisional application and a statement that the translation is accurate before the scheduled publication date.

The situation in which a patent application publication results from a nonprovisional application that claims the benefit of a provisional application that was filed in a language other than English, and no English-language translation of the provisional application was filed in either the provisional application or the nonprovisional application, will not occur unless: (1) The Office fails to issue a notice during the preexamination processing of the nonprovisional application requiring the applicant to timely file an English-language translation of the provisional application; and (2) the applicant fails to provide the English-language translation of the non-English-language provisional application before the publication date of the patent application publication. Once this situation comes to the Office's attention, § 1.78(a)(5)(iv) as now amended provides that the Office may issue a notice requiring the applicant (in the nonprovisional application that resulted in the patent application publication) to provide an English-language translation of the non-English-language provisional application and a statement that the translation is accurate (the Office may also simply obtain its own English-language translation of the non-English-language provisional application if that appears to be the most convenient course of action). Failure to timely provide an English-

language translation of the non-English-language provisional application and a statement that the translation is accurate in reply to such a notice will result in abandonment in a pending nonprovisional application, and may jeopardize the claim to the benefit of the provisional application in any situation (since the requirements of § 1.78(a)(5) have not been complied with).

Comment 8: One comment questioned whether a nonprovisional application which entered the national stage from an international application after compliance with 35 U.S.C. 371 must include a reference under § 1.78 to the underlying international application.

Response: A reference under § 1.78 to the underlying international application is neither necessary nor appropriate in a nonprovisional application which entered the national stage from an international application after compliance with 35 U.S.C. 371. *See Manual of Patent Examining Procedure* § 1893.03(c) (8th ed. 2001) (a national stage application filed under 35 U.S.C. 371 may not claim benefit of the filing date of the international application of which it is the national stage since its filing date is the date of filing of that international application).

Comment 9: One comment suggested that the surcharge for the unintentionally delayed submission of a priority claim was excessive.

Response: As indicated in the final rule to implement eighteen-month publication, this surcharge amount must be sufficient to provide an incentive for applicant to exercise care to ensure that any desired claim under 35 U.S.C. 119, 120, 121, or 365(a) or (c) is timely presented. As such, the surcharge amount tracks the fee amount for a petition to revive an unintentionally abandoned application (35 U.S.C. 41(a)(7)). *See Changes to Implement Eighteen-Month Publication of Patent Applications,* 65 FR at 57040, 1239 *Off. Gaz. Pat. Office* at 77 (comment 8 and response).

Comment 10: One comment noted that a nonprovisional application which entered the national stage from an international application after compliance with 35 U.S.C. 371 has already been published as an international application.

Response: As indicated in the final rule to implement eighteen-month publication, the International Bureau publication of an international application will not be included in the Office's patent application publication search database. The Office must (re)publish international applications that entered the national stage to place these applications into its patent application publication search database. The benefit gained by ensuring that these prior art documents will be included in the Office's patent application publication search database outweighs the cost of (re)publishing these applications. *See Changes to Implement Eighteen-Month Publication of Patent Applications,* 65 FR at 57045, 1239 *Off. Gaz. Pat. Office* at 82 (comment 47 and response).

Classification

Administrative Procedure Act

The changes in this final rule concern only the procedures for filing claims for the benefit of a prior-filed application under 35 U.S.C. 119(e) or 120, the procedures for filing an English language translation of a non-English language provisional application, and technical corrections to the provisions of §§ 1.78, 1.311, and 1.434. Because all of the changes relate to Office practices and procedures, prior notice and an opportunity for public comment was not required pursuant to 5 U.S.C. 553(b)(A) (or any other law), and thirty-day advance publication is not required pursuant to 5 U.S.C. 553(d) (or any other law). However, because the Office desired the benefit of public comment on this topic, the Office voluntarily accepted comments pursuant to a published notice proposing the above-mentioned changes.

Regulatory Flexibility Act

As prior notice and an opportunity for public comment are not required pursuant to 5 U.S.C. 553 (or any other law), the analytical requirements of the Regulatory Flexibility Act (5 U.S.C. 601 et seq.) are inapplicable. As such, the regulatory flexibility analysis is not required, and none has been provided. See 5 U.S.C. 603.

Executive Order 13132

This rulemaking does not contain policies with federalism implications sufficient to warrant preparation of a Federalism Assessment under Executive Order 13132 (Aug. 4, 1999).

Executive Order 12866

This rulemaking has been determined to be not significant for purposes of Executive Order 12866 (Sept. 30, 1993).

Paperwork Reduction Act

This final rule involves information collection requirements that are subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). The collections of information involved in this final rule have been reviewed and previously approved by OMB under the following control numbers: 0651-0021, 0651-0031, 0651-0032, and 0651-0033.

The title, description and respondent description of each of the information collections are shown below with an estimate of each of the annual reporting burdens. Included in each estimate is the time for reviewing instructions, gathering and maintaining the data needed, and completing and reviewing the collection of information.

OMB Number: 0651-0021.

Title: Patent Cooperation Treaty.

Form Numbers: PCT/RO/101,ANNEX/134/144, PTO-1382, PCT/IPEA/401, PCT/IB/328.

Type of Review: Regular submission (approved through December of 2003).

Affected Public: Individuals or Households, Business or Other For-Profit Institutions, Federal Agencies or Employees, Not-for-Profit Institutions, Small Businesses or Organizations.

Estimated Number of Respondents: 331,288.

Estimated Time Per Response: Between 15 minutes and 4 hours.

Estimated Total Annual Burden Hours: 401,083.

Needs and Uses: The information collected is required by the Patent Cooperation Treaty (PCT). The general purpose of the PCT is to simplify the filing of patent applications on the same invention in different countries. It provides for a centralized filing procedure and a standardized application format.

OMB Number: 0651-0031.

Title: Patent Processing (Updating).

Form Numbers: PTO/SB/08/21-27/30-32/35-37/42/43/61/62/63/64/67/68/ 91/92/ 96/97/PTO-2053/PTO-2055.

Type of Review: Regular submission (approved through October of 2002).

Affected Public: Individuals or Households, Business or Other For-Profit Institutions, Not-for-Profit Institutions and Federal Government.

Estimated Number of Respondents: 2,247,389.

Estimated Time Per Response: 0.45 hours.

Estimated Total Annual Burden Hours: 1,021,941 hours.

Needs and Uses: During the processing of an application for a patent, the applicant/agent may be required or desire to submit additional information to the United States Patent and Trademark Office concerning the examination of a specific application. The specific information required or which may be submitted includes: Information Disclosure Statements; Terminal Disclaimers; Petitions to Revive; Express Abandonments; Appeal Notices; Petitions for Access; Powers to Inspect; Certificates of Mailing or Transmission; Statements under § 3.73(b); Amendments; Petitions and their Transmittal Letters; and Deposit Account Order Forms.

OMB Number: 0651-0032.

Title: Initial Patent Application.

Form Number: PTO/SB/01-07/13PCT/17-19/29/101-110.

Type of Review: Regular submission (approved through October of 2002).

Affected Public: Individuals or Households, Business or Other For-Profit Institutions, Not-for-Profit Institutions and Federal Government.

Estimated Number of Respondents: 319,350.

Estimated Time Per Response: 9.35 hours.

Estimated Total Annual Burden Hours: 2,984,360 hours.

Needs and Uses: The purpose of this information collection is to permit the Office to determine whether an application meets the criteria set forth in the patent statute and regulations. The standard Fee Transmittal form, New Utility Patent Application Transmittal

form, New Design Patent Application Transmittal form, New Plant Patent Application Transmittal form, Declaration, and Plant Patent Application Declaration will assist applicants in complying with the requirements of the patent statute and regulations, and will further assist the Office in the processing and examination of the application.

OMB Number: 0651-0033.
Title: Post Allowance and Refiling.
Form Numbers: PTO/SB/13/14/44/50-57; PTOL-85b.
Type of Review: Regular submission (approved through September of 2000).
Affected Public: Individuals or Households, Business or Other For-Profit Institutions, Not-for-Profit Institutions and Federal Government.
Estimated Number of Respondents: 135,250.
Estimated Time Per Response: 0.325 hour.
Estimated Total Annual Burden Hours: 43,893 hours.
Needs and Uses: This collection of information is required to administer the patent laws pursuant to title 35, U.S.C., concerning the issuance of patents and related actions including correcting errors in printed patents, refiling of patent applications, requesting reexamination of a patent, and requesting a reissue patent to correct an error in a patent. The affected public includes any individual or institution whose application for a patent has been allowed or who takes action as covered by the applicable rules. Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB control number.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Reporting and record keeping requirements, Small Businesses.

For the reasons set forth in the preamble, 37 CFR part 1 is amended as follows:

PART 1—RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 2(b)(2).

2. Section 1.14 is amended by revising paragraph (i)(2) to read as follows:

§ 1.14 Patent applications preserved in confidence.

* * * * *

(i) * * *

(2) A copy of an English language translation of an international application which has been filed in the United States Patent and Trademark Office pursuant to 35 U.S.C. 154(d)(4) will be furnished upon written request including a showing that the publication of the application in accordance with PCT Article 21(2) has occurred and that the U.S. was designated, and upon payment of the appropriate fee (§ 1.19(b)(2) or § 1.19(b)(3)).

* * * * *

3. Section 1.55 is amended by revising paragraphs (a)(1)(i) and (c) to read as follows:

§ 1.55 Claim for foreign priority.

(a) * * *

(1)(i) In an original application filed under 35 U.S.C. 111(a), the claim for priority must be presented during the pendency of the application, and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior foreign application. This time period is not extendable. The claim must identify the foreign application for which priority is claimed, as well as any foreign application for the same subject matter and having a filing date before that of the application for which priority is claimed, by specifying the application number, country (or intellectual property authority), day, month, and year of its filing. The time periods in this paragraph do not apply in an application under 35 U.S.C. 111(a) if the application is:

(A) A design application; or

(B) An application filed before November 29, 2000.

* * * * *

(c) Unless such claim is accepted in accordance with the provisions of this paragraph, any claim for priority under 35 U.S.C. 119(a)-(d) or 365(a) not presented within the time period provided by paragraph (a) of this section is considered to have been waived. If a claim for priority under 35 U.S.C. 119(a)-(d) or 365(a) is presented after the time period provided by paragraph (a) of this section, the claim may be accepted if the claim identifying the prior foreign application by specifying its application number, country (or intellectual property authority), and the day, month, and year of its filing was unintentionally delayed. A petition to accept a delayed claim for priority under 35 U.S.C. 119(a)-(d) or 365(a) must be accompanied by:

(1) The claim under 35 U.S.C. 119(a)-(d) or 365(a) and this section to the prior foreign application, unless previously submitted;

(2) The surcharge set forth in § 1.17(t); and

(3) A statement that the entire delay between the date the claim was due under paragraph (a)(1) of this section and the date the claim was filed was unintentional. The Commissioner may require additional information where there is a question whether the delay was unintentional.

4. Section 1.78 is amended by revising paragraph (a) to read as follows:

§ 1.78 Claiming benefit of earlier filing date and cross references to other applications.

(a)(1) A nonprovisional application or international application designating the United States of America may claim an invention disclosed in one or more prior-filed copending nonprovisional applications or international applications designating the United States of America. In order for an application to claim the benefit of a prior-filed copending nonprovisional application or international application designating the United States of America, each prior-filed application must name as an inventor at least one inventor named in the later-filed application and disclose the named inventor's invention claimed in at least one claim of the later-filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, each prior-filed application must be:

(i) An international application entitled to a filing date in accordance with PCT Article 11 and designating the United States of America; or

(ii) Complete as set forth in § 1.51(b); or

(iii) Entitled to a filing date as set forth in § 1.53(b) or § 1.53(d) and include the basic filing fee set forth in § 1.16; or

(iv) Entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21(l) within the time period set forth in § 1.53(f).

(2)(i) Except for a continued prosecution application filed under § 1.53(d), any nonprovisional application or international application designating the United States of America claiming the benefit of one or more prior-filed copending nonprovisional applications or international applications designating the United States of America must contain or be amended to contain a reference to each such prior-filed application, identifying it by application number (consisting of the series code and serial number) or international application number and international filing date and indicating the relationship of the applications. Cross references to other related applications may be made when appropriate (see § 1.14).

(ii) This reference must be submitted during the pendency of the later-filed application. If the later-filed application is an application filed under 35 U.S.C. 111(a), this reference must also be submitted within the later of four months from the actual filing date of the later-filed application or sixteen months from the filing date of the prior-filed application. If the later-filed application is a nonprovisional application which entered the national stage from an international application after compliance with 35 U.S.C. 371, this reference must also be submitted within the later of four months

from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) in the later-filed international application or sixteen months from the filing date of the prior-filed application. These time periods are not extendable. Except as provided in paragraph (a)(3) of this section, the failure to timely submit the reference required by 35 U.S.C. 120 and paragraph (a)(2)(i) of this section is considered a waiver of any benefit under 35 U.S.C. 120, 121, or 365(c) to such prior-filed application. The time periods in this paragraph do not apply if the later-filed application is:

(A) An application for a design patent;

(B) An application filed under 35 U.S.C. 111(a) before November 29, 2000; or

(C) A nonprovisional application which entered the national stage after compliance with 35 U.S.C. 371 from an international application filed under 35 U.S.C. 363 before November 29, 2000.

(iii) If the later-filed application is a nonprovisional application, the reference required by this paragraph must be included in an application data sheet (§ 1.76), or the specification must contain or be amended to contain such reference in the first sentence following the title.

(iv) The request for a continued prosecution application under § 1.53(d) is the specific reference required by 35 U.S.C. 120 to the prior-filed application. The identification of an application by application number under this section is the identification of every application assigned that application number necessary for a specific reference required by 35 U.S.C. 120 to every such application assigned that application number.

(3) If the reference required by 35 U.S.C. 120 and paragraph (a)(2) of this section is presented in a nonprovisional application after the time period provided by paragraph (a)(2)(ii) of this section, the claim under 35 U.S.C. 120, 121, or 365(c) for the benefit of a prior-filed copending nonprovisional application or international application designating the United States of America may be accepted if the reference identifying the prior-filed application by application number or international application number and international filing date was unintentionally delayed. A petition to accept an unintentionally delayed claim under 35 U.S.C. 120, 121, or 365(c) for the benefit of a prior-filed application must be accompanied by:

(i) The reference required by 35 U.S.C. 120 and paragraph (a)(2) of this section to the prior-filed application, unless previously submitted;

(ii) The surcharge set forth in § 1.17(t); and

(iii) A statement that the entire delay between the date the claim was due under paragraph (a)(2)(ii) of this section and the date the claim was filed was unintentional. The Commissioner may require additional information where there is a question whether the delay was unintentional.

(4) A nonprovisional application, other than for a design patent, or an international application designating the United States of America may claim an invention disclosed in one or more prior-filed provisional applications. In order for an application to claim the benefit of one or more prior-filed provisional applications, each prior-filed provisional application must name as an inventor at least one inventor named in the later-filed application and disclose the named inventor's invention claimed in at least one claim of the later-filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, each prior-filed provisional application must be entitled to a filing date as set forth in § 1.53(c), and the basic filing fee set forth in § 1.16(k) must be paid within the time period set forth in § 1.53(g).

(5)(i) Any nonprovisional application or international application designating the United States of America claiming the benefit of one or more prior-filed provisional applications must contain or be amended to contain a reference to each such prior-filed provisional application, identifying it by the provisional application number (consisting of series code and serial number).

(ii) This reference must be submitted during the pendency of the later-filed application. If the later-filed application is an application filed under 35 U.S.C. 111(a), this reference must also be submitted within the later of four months from the actual filing date of the later-filed application or sixteen months from the filing date of the prior-filed provisional application. If the later-filed application is a nonprovisional application which entered the national stage from an international application after compliance with 35 U.S.C. 371, this reference must also be submitted within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) in the later-filed international application or sixteen months from the filing date of the prior-filed provisional application. These time periods are not extendable. Except as provided in paragraph (a)(6) of this section, the failure to timely submit the reference is considered a waiver of any benefit under 35 U.S.C. 119(e) to such prior-filed provisional application. The time periods in this paragraph do not apply if the later-filed application is:

(A) An application filed under 35 U.S.C. 111(a) before November 29, 2000; or

(B) A nonprovisional application which entered the national stage after compliance with 35 U.S.C. 371 from an international application filed under 35 U.S.C. 363 before November 29, 2000.

(iii) If the later-filed application is a nonprovisional application, the reference required by this paragraph must be included in an application data sheet (§ 1.76), or the specification must contain or be amended to contain such reference in the first sentence following the title.

(iv) If the prior-filed provisional application was filed in a language other than English and an English-language translation of the prior-filed provisional application and a statement that the translation is accurate were not previously filed in the prior-filed provisional application or the later-filed nonprovisional application, applicant will be notified and given a period of time within which to file an English-language translation of the non-English-language prior-filed provisional application and a statement that the translation is accurate. In a pending nonprovisional application, failure to timely reply to such a notice will result in abandonment of the application.

(6) If the reference required by 35 U.S.C. 119(e) and paragraph (a)(5) of this section is presented in a nonprovisional application after the time period provided by paragraph (a)(5)(ii) of this section, the claim under 35 U.S.C. 119(e) for the benefit of a prior-filed provisional application may be accepted during the pendency of the later-filed application if the reference identifying the prior-filed application by provisional application number was unintentionally delayed. A petition to accept an unintentionally delayed claim under 35 U.S.C. 119(e) for the benefit of a prior-filed provisional application must be accompanied by:

(i) The reference required by 35 U.S.C. 119(e) and paragraph (a)(5) of this section to the prior-filed provisional application, unless previously submitted;

(ii) The surcharge set forth in § 1.17(t); and

(iii) A statement that the entire delay between the date the claim was due under paragraph (a)(5)(ii) of this section and the date the claim was filed was unintentional. The Commissioner may require additional information where there is a question whether the delay was unintentional.

* * * * *

5. Section 1.311 is amended by revising paragraph (a) to read as follows:

§ 1.311 Notice of allowance.

(a) If, on examination, it appears that the applicant is entitled to a patent under the law, a notice of allowance will be sent to the applicant at the correspondence address indicated in § 1.33. The notice of allowance shall specify a sum constituting the issue fee which must be paid within three months from the date of mailing of the notice of allowance to avoid abandonment of the application. The sum specified in the notice of allowance may also include the publication fee, in which case the issue fee and publication fee (§ 1.211(e)) must both be paid within three months from the date of mailing of the notice of allowance to avoid abandonment of the application. This three-month period is not extendable.

* * * * *

6. Section 1.434 is amended by revising paragraph (d)(2) to read as follows:

§ 1.434 The request.

* * * * *

(d) * * *

(2) A reference to any prior-filed national application or international application designating the United States of America, if the benefit of the filing date for the prior-filed application is to be claimed.

December 19, 2001

JAMES E. ROGAN
Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office

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Certificates of Correction for January 1, 2002

D. 420,122	5,963,894	6,093,465	6,133,563
D. 420,319	5,966,159	6,094,308	6,136,252
D. 436,571	5,967,928	6,095,230	6,137,561
D. 444,406	5,978,861	6,095,434	6,137,933
D. 445,534	5,979,183	6,097,239	6,139,416
PP. 11,484	5,980,750	6,102,943	6,139,422
5,101,993	5,988,030	6,103,499	6,140,126
5,106,193	5,990,304	6,107,324	6,140,244
5,284,187	5,998,459	6,110,443	6,140,375
5,296,944	6,001,814	6,112,822	6,141,181
5,538,853	6,002,406	6,119,618	6,142,233
5,574,826	6,003,699	6,119,904	6,143,216
5,591,427	6,006,363	6,120,344	6,144,172
5,598,891	6,009,288	6,120,503	6,145,023
5,621,860	6,011,625	6,120,523	6,145,233
5,665,095	6,012,904	6,121,964	6,145,909
5,684,149	6,040,504	6,123,027	6,146,004
5,749,843	6,043,211	6,123,796	6,146,181
5,750,830	6,051,093	6,124,173	6,146,854
5,770,262	6,051,423	6,124,210	6,147,460
5,789,543	6,057,065	6,124,231	6,147,488
5,811,213	6,060,613	6,124,774	6,147,538
5,831,333	6,063,829	6,124,818	6,147,578
5,843,725	6,067,462	6,124,939	6,147,691
5,851,824	6,069,410	6,124,971	6,147,711
5,869,623	6,070,029	6,125,457	6,148,155
5,874,005	6,072,737	6,126,482	6,148,634
5,880,824	6,077,504	6,126,943	6,148,716
5,900,481	6,080,244	6,127,386	6,150,113
5,902,879	6,080,676	6,128,087	6,150,770
5,908,107	6,082,321	6,128,811	6,150,842
5,922,592	6,084,006	6,130,325	6,151,589
5,930,662	6,090,570	6,131,109	6,152,368
5,935,673	6,090,612	6,131,739	6,152,615
5,938,729	6,090,701	6,132,349	6,153,075
5,941,829	6,091,885	6,132,570	6,153,281
5,947,736	6,093,256	6,133,096	6,153,399
6,153,700	6,174,060	6,200,645	6,235,186
6,154,051	6,174,871	6,201,036	6,241,334
6,154,156	6,174,908	6,201,885	6,242,445
6,154,401	6,175,142	6,201,932	6,242,490
6,154,613	6,175,543	6,201,979	6,243,300
6,155,798	6,176,180	6,202,107	6,243,709
6,155,892	6,176,524	6,202,259	6,244,215
6,156,123	6,177,248	6,202,587	6,245,644
6,156,343	6,177,435	6,203,159	6,245,681
6,156,554	6,177,650	6,203,959	6,245,707
6,157,302	6,177,978	6,204,233	6,245,795
6,158,310	6,178,107	6,204,264	6,246,065
6,158,366	6,178,971	6,204,890	6,246,980
6,158,891	6,179,806	6,205,528	6,247,099
6,159,239	6,179,817	6,206,353	6,248,600
6,159,527	6,180,262	6,206,873	6,248,850
6,159,587	6,180,958	6,207,564	6,251,470
6,159,602	6,181,308	6,207,990	6,251,924
6,159,627	6,181,371	6,208,005	6,252,113
6,160,581	6,182,819	6,208,237	6,252,292
6,160,598	6,183,078	6,209,448	6,252,301
6,160,964	6,183,412	6,210,178	6,253,466
6,161,500	6,183,854	6,210,834	6,253,474
6,162,454	6,183,926	6,210,873	6,253,755
6,162,929	6,184,891	6,211,023	6,253,767
6,163,547	6,184,919	6,211,245	6,254,272
6,163,652	6,185,381	6,211,562	6,255,235
6,164,206	6,185,426	6,211,910	6,257,479
6,164,623	6,185,689	6,212,021	6,257,502
6,166,355	6,185,993	6,212,267	6,257,548
6,166,770	6,186,936	6,212,601	6,259,160
6,167,199	6,187,380	6,213,223	6,262,033
6,167,202	6,187,887	6,215,641	6,262,187
6,167,238	6,188,011	6,216,027	6,262,521
6,168,660	6,189,019	6,216,094	6,262,764
6,169,028	6,189,901	6,216,831	6,263,678
6,169,496	6,190,065	6,218,228	6,263,822
6,169,544	6,190,514	6,218,315	6,264,208
6,169,574	6,190,924	6,220,202	6,265,722
6,169,578	6,191,408	6,220,433	6,265,942
6,169,579	6,191,423	6,221,275	6,266,150
6,169,647	6,193,704	6,221,678	6,266,348
6,170,338	6,194,188	6,221,897	6,266,595
6,171,511	6,194,551	6,222,436	6,266,665
6,171,528	6,195,678	6,222,999	6,266,708
6,171,541	6,197,688	6,223,410	6,266,767
6,171,723	6,197,944	6,226,891	6,268,752
6,172,081	6,198,154	6,227,591	6,272,016
6,172,463	6,198,534	6,228,581	6,297,064
6,172,707	6,199,544	6,229,063	6,307,000
6,172,850	6,199,736	6,229,867	
6,173,331	6,200,436	6,234,660	

ERRATA FOR MISSING PATENTS FROM DECEMBER 25, 2001 OFFICIAL GAZETTE ISSUE

The following patents issued on December 25, 2001. Due to a processing error, the images and accompanying text associated with these patents failed to appear in the Official Gazette on that date. We regret any inconvenience this may have caused.

US 6,332,776 B1

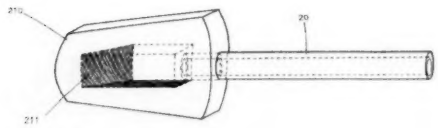
LIGHTED DENTAL PROP

Daniel H. Martin, and Todd E. Davis, both of 3155 E. Patrick La., Suite 14, Las Vegas, Nev. 89120

Continuation-in-part of application No. 09/037,682, filed on Mar. 10, 1998, now abandoned. This application Sep. 13, 1999, Appl. No. 394,412.

Int. Cl. A61C *5/00; 1/00;* **A61B** *1/24*

U.S. Cl. 433—140 **14 Claims**



1. A dental prop assembly comprising:

a) a unitary body constructed such that when said body is placed between the upper and lower teeth of a patient, the mouth is held open;

b) said unitary body formed with a first cavity on one side and second cavity on one end, said first cavity constructed with an inclined reflective surface such that the portion of the incline furthest from the second cavity is less shallow than the portion of the incline nearest the second cavity;

c) a light source;

d) a light conducting cable connected to said light source, whereby when said light conducting cable is attached to the second cavity, light will be reflected from the reflective surface of the first cavity and be emitted from the unitary body to illuminate the mouth of the patient.

US 6,332,777 B1

DEVICE FOR FORMING A DENTAL PROSTHESIS

Franz Sutter, Bennwilerstrasse 42, CH-4435 Niederdorf, Switzerland, assignor to Franz Sutter, Niederdorf, Switzerland

PCT No. PCT/EP98/02966, § 371 Date Mar. 9, 2000, § 102(e) Date Mar. 9, 2000, PCT Pub. No. WO98/52490, PCT Pub. Date Nov. 26, 1998

PCT Filed May 20, 1998, Appl. No. 424,508

Claims priority, application Switzerland, May 24, 1997, 1220/97; May 24, 1997, 1222/97

Int. Cl. A61C *8/00*

U.S. Cl. 433—173 **28 Claims**

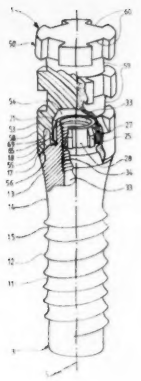
1. A device for forming a dental prosthesis, comprising:

a support, and

an element detachably connected to the support by fixing means,

wherein the support has an anchoring part designed for anchoring in at least one of a bone and a master model, a head designed to protrude from the at least one of the bone and the master model, and a shoulder located between the head and the anchoring part,

wherein the element has a wall which surrounds an interior space in a cross-section and has an annular supporting surface,



wherein, when the device is assembled, the support surface lies on the shoulder and the element surrounds the head in said cross section,

wherein at least one of the fixing means and the support has at least one elastically deformable section,

wherein, when the device is assembled, the fixing means are at least one of jammed and latched with the support either externally on the support on a side of the shoulder facing away from the anchoring part or in an axial hole of the support, and

wherein the at least one elastically deformable section is located in the interior space and separated from the wall by a space.

US 6,332,778 B1

IMMEDIATELY LOADABLE EXPANDING IMPLANT

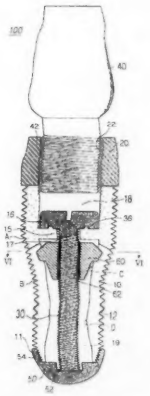
Pill-Hoon Choung, Seoul, Rep. of Korea, assignor to Pill-Hoon Jung, Seoul, Rep. of Korea

Filed Feb. 14, 2000, Appl. No. 503,242

Claims priority, application Rep. of Korea, Feb. 12, 1999, 99/5167

***Int. Cl. A61C** 8/00*

U.S. Cl. 433—173 **19 Claims**



1. An implant having a fixture inserted into a socket and an abutment coupled to an upper portion of said fixture, comprising:

said fixture including a hollow body, a plurality of screw threads formed along a circumferential outer surface of said hollow body, and a partition wall having a through hole, said partition wall integrally formed in an inside wall of said hollow body

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and dividing an inner space of said hollow body into an upper abutment receiving portion and a lower nut receiving portion formed with at least one slot extended from a lower end of said hollow body to a first position,

a screw having a head portion resting against said partition wall and disposed in said abutment receiving portion and a body portion inserted into said through hole and extended to a lower portion of said nut receiving portion,

a nut fitted to said body potion of said screw and moved upward and downward in said nut receiving portion by the rotation of said screw;

said nut receiving portion formed so that said hollow body is outwardly expanded when said nut is moved to said first position; and

a protrusion formed on an upper portion of said partition wall and disposed in said abutment receiving portion, said screw having a groove corresponding to said protrusion.

US 6,332,779 B1

METHOD OF HARD TISSUE REPAIR

Todd M. Boyce, Aberdeen; David Kaes, Toms River; Nelson L. Scarborough, Ocean, and Samantha Salkeld, Cliffwood, all of N.J., assignors to Osteotech, Inc., Eatontown, N.J.

Filed Jul. 3, 2000, Appl. No. 609,982

Int. Cl. A61C *5/00*

U.S. Cl. 433—215 **10 Claims**

1. A method for promoting the growth of bone, periodontium, or ligament in a warm-blooded vertebrate, he method comprising:

producing a surgical flap to expose the bone, periodontium or ligament;

debriding the bone, periodontium or ligament to remove organic matter from the bone, periodontium or ligament;

implanting an effective amount of an osteogenic bone graft material, the bone graft material consisting of an osteoimplant having not greater than about 32% void volume formed, at least in part, from elongate bone-derived elements optionally in combination with bone powder;

replacing the flap; and,

allowing the bone, periodontium or ligament to regrow.

US 6,332,780 B1

IMPLANT SIMULATING DEVICE

Doris Traxel, Basel, and Urs Weber, Reigoldswil, both of Switzerland, assignors to Synthes (U.S.A.), Paoli, Pa.

Continuation-in-part of application No. PCT/CH97/00440, filed on Nov. 21, 1997. This application May 19, 2000, Appl. No. 573,571.

Int. Cl. G09B *23/28*

U.S. Cl. 434—267 **17 Claims**

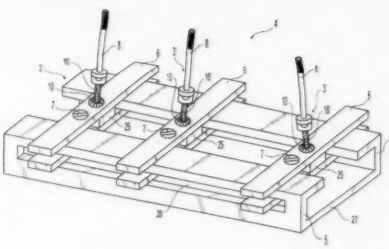
1. An implant simulating device for simulating position and orientation of an elongated element with respect to a plurality of fixation elements of a fixation system, the implant simulating device comprising:

a base plate having a length and a width;

first and second arms extending from the base plate, each of the first and second arms defining a track;

at least two cross members, each cross member configured and dimensioned for slidingly engaging the track of the first and second arms and having a locking element for fixing the position of the cross member;

a fixation element simulator associated with each of the at least two cross members and capable of angular positioning with *respect to the cross members; and*



a correlation system for correlating at least two fixation element simulators to at least two fixation elements of the fixation system,

wherein coupling of an elongated element in the at least two fixation element simulators after correlation by the correlating system allows the elongated element to be configured and dimensioned for coupling to the fixation elements prior to implantation.

US 6,332,781 B1

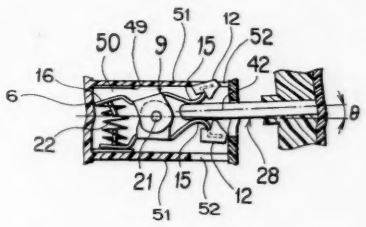
CONNECTOR STRUCTURE HAVING DUST/WATER DROPLET DAMAGE PREVENTION CAPABILITY

Hidetaka Ito, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Apr. 6, 2000, Appl. No. 544,297

Int. Cl. H01R *33/00*

U.S. Cl. 439—34 **6 Claims**



1. A connection structure for connecting a power supply to a vehicle door comprising: a door side connector and a body side connector to be engaged with each other to interconnect door side and body side electric circuits, either one of said door side connector and said body side connector being formed with a housing containing openings and being provided with female terminals, and the other of said door side connector and said body side connector being provided with male terminals, each of said female terminals including contact members having a pair of contact portions with *their forward ends pivotally movable in a horizontal direction* between open and closed positions adjacent a housing opening about a pivot spaced from said housing opening, a spring member *normally biasing said contact members in a closing direction,* wherein to connect said connector each male terminal is inserted through said opening and between the forward ends of a pair of *said contact portions.*

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US 6,332,782 B1

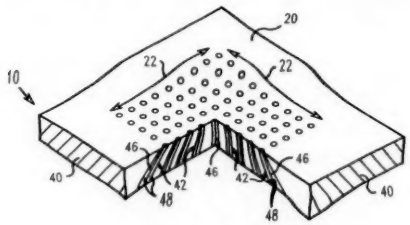
SPATIAL TRANSFORMATION INTERPOSER FOR ELECTRONIC PACKAGING

Raschid J. Bezama, Mahopac; Govindarajan Natarajan, Pleasant Valley, and Robert W. Pasco, Wappinger Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 19, 2000, Appl. No. 597,919

Int. Cl. H01R 12/00

U.S. Cl. 439—66 **45 Claims**



1. An interconnect substrate for electrically connecting two electronic modules having differing conductive array parameters comprising:

an interposer having first and second conductive array grids, said first and second conductive array grids having differing conductive array parameters selected from the group consisting of differing array shape, array size, type of array, and combinations thereof;

a plurality of conductors comprising at least a conductive material surrounded by a non-conductive material, said conductors traversing a thickness of said interposer whereby said non-conductive material has a radial thickness changing as said conductors traverse through said interposer to spatially transform said differing conductive array parameters to connect the first conductive array grid to an opposing second conductive array grid having said differing conductive array parameters for providing an electrical interconnection therebetween; and

a matrix surrounding said plurality of conductors,

whereby said interposer having said non-conductive material with said radial thickness changing there-through said interposer spatially transforms said differing conductive array parameters of said two electronic modules to electrically connect the electronic modules when provided therebetween.

US 6,332,783 B1

CIRCUIT MODULE HAVING CONNECTORS, AND ELECTRONIC APPARATUS INCORPORATING THE CIRCUIT MODULE

Yoshiaki Ukiya, Ome, and Shizuo Morioka, Hanno, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1999, Appl. No. 450,220

Claims priority, application Japan, Nov. 30, 1998, 10-340059

Int. Cl. H01R *12/00*

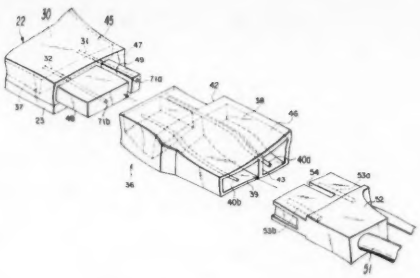
U.S. Cl. 439—76.1 ***21 Claims***

1. A circuit module comprising:

a circuit board;

a high-voltage element electrically connected to the circuit board and having a first output terminal for outputting a reference voltage and a second output terminal for outputting a voltage higher than the reference voltage; and

an electrically insulating cover covering the high-voltage element and including a connector section having:



a first connection terminal electrically connected to the first output terminal;

a second connection terminal electrically connected to the second output terminal and spaced apart from the first connection terminal; and

a partition provided between the first connection terminal and the second connection terminal extending to a top surface and a bottom surface of the connector section, the partition extending in a lengthwise direction of the connection terminals and concealing the connection terminals from each other.

US 6,332,784 B1

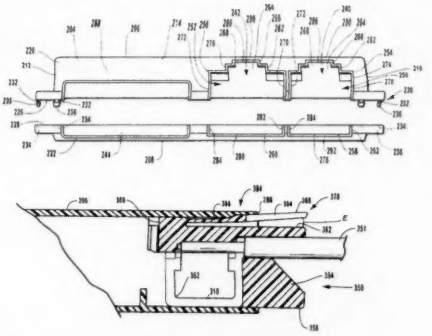
HOUSING FOR A COMMUNICATIONS CARD

David Oliphant, 5532 W. Lockwood Dr., Salt Lake City, Utah 84120, and Brent Madsen, 25 Sarah St., Providence, Utah 84332

Filed Jun. 2, 2000, Appl. No. 585,931

Int. Cl. H01R *12/00*

U.S. Cl. 439—76.1 **23 Claims**



1. A communications card that conforms to the PCMCIA requirements for a Type III PC card, the communications card comprising:

a top cover portion including a first outer surface, an opposing inner surface, a front surface, and a rear surface;

a bottom cover including a first outer surface, an opposing inner surface, a front surface and a rear surface;

an upper portion of an opening being defined by the top cover;

a lower portion of the opening being defined by the bottom cover, the opening defining an entrance to a receptacle disposed within the communications card, the receptacle being sized and configured to receive a RJ series connector plug such that no portion of the plug extends through either the first outer surface of the top cover or the first outer surface of the bottom cover of the communications card when the connector plug is located in a fully inserted position within the receptacle; and

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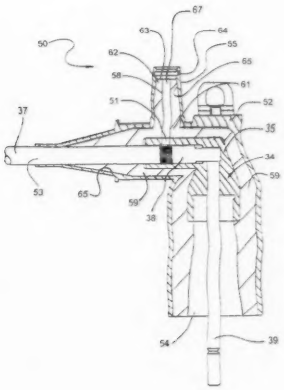
a latching area that is sized and configured to securely hold the RJ series connector plug within the receptacle, the latching area also being sized and configured to allow the RJ series connector plug to be removed from the fully inserted position in the receptacle without damage to the plug and without the user depressing a biased clip of the connector plug if sufficient force is applied to a body of the connector plug.

US 6,332,785 B1

HIGH VOLTAGE ELECTRICAL CONNECTOR WITH ACCESS CAVITY AND INSERTS FOR USE THEREWITH

Frank J. Muench, Jr., Waukesha; John M. Makal, Menomonee Falls, and James A. Wenzel, Sullivan, all of Wis., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jun. 30, 1997, Appl. No. 886,163
Int. Cl. H01R *4/58*
U.S. Cl. 439—88 **29 Claims**



1. A high voltage electrical connector comprising:

a body portion of electrically insulative material;

a body portion conductive external shield at least partially surrounding the body portion;

a projection of electrically insulating material having a first end connected to the body portion and a second end extending from the body portion;

an access cavity extending through the projection and having an opening in the second end of the projection, the access activity communicating an exterior of the electrical connector with a conductive portion of an interior of the electrical connector;

a projection conductive external shield secured to the projection, the projection conductive external shield being permanently electrically coupled to the body portion conductive external shield and extending from the body portion conductive external shield at least to the second end of the projection; and

an insert having a body made from an insulative material, the body comprising:

an insertion portion received by the access cavity, and

an exposure portion, the exposure portion including

an exterior surface,

a conductive coating fixedly secured to the exterior portion and electrically coupled to the conductive external shield.

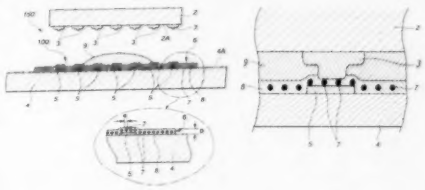
US 6,332,786 B1

ELECTRICAL CONNECTION DEVICE EMPLOYING AN ANISOTROPIC ELECTRICALLY CONDUCTIVE FILM

Yasuhiro Suga, Tochigi, and Noriyuki Honda, Aichi, both of Japan, assignors to Sony Corporation, Japan

Filed Jan. 11, 2000, Appl. No. 480,259
Claims priority, application Japan, Jan. 11, 1999, 11-004657
Int. Cl. H01R *4/58*
U.S. Cl. 439—91 **17 Claims**

1. An anisotropic electrically conductive film in which metal



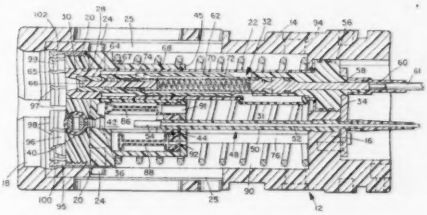
coated particles having a resin as a core material are dispersed in an insulating adhesive, wherein said resin of the metal coated particles is coated with metal, that is formed of at least one layer, said metal having a total thickness of 1000 to 3000 Å.

US 6,332,787 B1

WET-MATEABLE ELECTRO-OPTICAL CONNECTOR

Stewart M. Barlow, and James L. Cairns, both of Ormond Beach, Fla., assignors to Ocean Design, Inc., Ormond Beach, Fla.

Filed Aug. 18, 2000, Appl. No. 641,313
This patent is subject to a terminal disclaimer.
Int. Cl. H01R *13/44*
U.S. Cl. 439—138 **17 Claims**



1. An electro-optical connector, comprising:

a receptacle unit and a plug unit releasably securable to the receptacle unit in a mated condition of the units;

the units each having a rear end, a front end, and at least two separate chambers extending side-by-side inwardly from the front end, one of said chambers comprising an optical contact chamber and the other of said chambers comprising an electrical contact chamber;

at least one optical contact element mounted in said optical contact chamber and at least one electrical contact element mounted in said electrical contact chamber;

each of said optical contact chambers having a front end wall having a recessed seat communicating with the respective optical contact chamber, and a seal member movably mounted in the seat, the seal member having at least one through bore and being movable in a non-axial direction relative to the respective unit between a first, closed position in which the through bore is offset from the optical contact chamber and the front end wall of the optical contact chamber is sealed, and a second, open position in which the seal through bore is aligned with the optical contact chamber;

the optical contact element in the optical contact chamber of the plug unit extending through the aligned through bores into the optical contact chamber of the receptacle unit when the units

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are mated together and the seal members are in the open position to contact the optical contact element in the optical contact chamber of the receptacle unit;

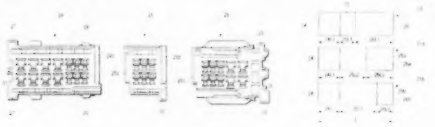
a first one of the electrical contact chambers having a front end wall having a sealable opening, an annular seal member mounted in the sealable opening, and a resiliently biased stopper movably disposed within the annular seal member and in sealing engagement with the annular seal member when the units are not mated, the electrical contact element in the electrical contact chamber comprising an electrical socket; and

the electrical contact element in the other electrical contact chamber comprising a conductive probe adapted for insertion through the sealable opening in the first electrical contact chamber to sealably engage the annular seal member and engage the electrical contact element in the first electrical contact chamber when the units are mated together.

US 6,332,788 B1
LEVER FITTING-TYPE CONNECTOR WITH DIVISION CONNECTORS

Toshiaki Okabe, Shizuoka, and Masanori Wakui, Aichi, both of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Feb. 4, 2000, Appl. No. 497,484
Claims priority, application Japan, Feb. 8, 1999, 11-030519
Int. Cl. H01R *13/62*
U.S. Cl. 439—157 **12 Claims**



1. A lever fitting-type connector comprising:

a unitary connector comprising a plurality of division connectors which can be combined together, said division connectors selected from a plurality of kinds of division connectors of different lengths, said unitary connector formed by combining said selected division connectors and having a predetermined length;

different kinds of terminals received in the plurality of division connectors; and

a lever pivotally mounted on bosses of said unitary connector having a plurality of terminals received therein, and said unitary connector being fitted into a mating connector by pivotally moving said lever about said bosses to connect said terminals respectively to terminals received in said mating connector,

wherein a second unitary connector having the predetermined length, and formed by combining different selected division connectors from the plurality of kinds of said division connectors, can be fitted into said mating connector by the lever.

US 6,332,789 B1
CONNECTOR SUPPORTING MECHANISM

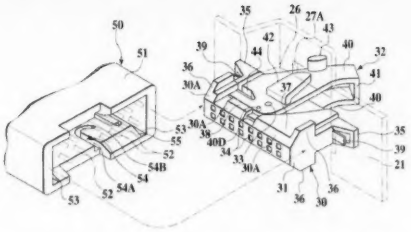
Toshiaki Okabe, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed May 30, 2000, Appl. No. 583,014
Claims priority, application Japan, May 31, 1999, P 11-152798; May 31, 1999, P 11-152801
Int. Cl. H01R *13/62*
U.S. Cl. 439—157 **3 Claims**

1. A connector supporting mechanism comprising:

a mounting member,

a first connector supported by said mounting member, and



a second connector which is fitted to said first connector, thereby being mounted to said mounting member, wherein

said first connector comprises a connector body having at least two ends and an engaging lever having at least two ends, the engaging lever is pivotally supported by a rotation supporting shaft such that one end of said engaging lever projects from one end of said connector body,

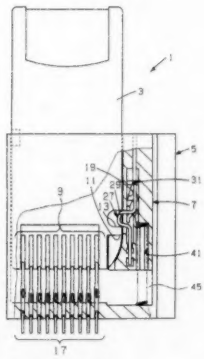
said one end of said engaging lever is formed with an engaging projection and a cam lever located nearer said rotation supporting shaft than said engaging projection, said engaging projection engages a back surface of said mounting member, said cam lever engages a front surface of said mounting member,

in a temporarily mounting state in which said engaging projection engages said mounting member, said second connector is fitted to said first connector, thereby turning said engaging lever, said engaging projection is supported by said mounting member, and a cam lever accommodating recess for accommodating said cam lever in a state in which said engaging projection is supported by said mounting member is formed on an inner wall of said second connector.

US 6,332,790 B1
CARD CONNECTOR

Yasuhiro Ishikawa; Masao Suzuki; Hideo Tadokoro, all of Sagamihara; Seiya Amatatsu, and Atsushi Nakanishi, both of Tokyo, all of Japan, assignors to Union Machinery Co., Ltd., Kanagawa, and Sony Corporation, Ltd., Tokyo, both of Japan

Filed Dec. 19, 2000, Appl. No. 739,115
Claims priority, application Japan, Dec. 27, 1999, 11-370397
Int. Cl. H01R *13/62*
U.S. Cl. 439—157 **6 Claims**



1. A card connector comprising:

a card member having card-side terminals;

a card holding member which has mother-apparatus-side terminals to be connected with the card-side terminals, is capable of accommodating the card member such that the card mem

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ber can be inserted therein and extracted therefrom, and is constructed such that, when the card member is seated inside the card holding member, the mother-apparatus-side terminals are in contact with the card-side terminals to establish an electrical connection therebetween;

a slider which is installed in the card holding member so as to be movable in the direction of insertion and extraction of the card member and which moves in the direction of insertion and extraction along with the insertion and extraction of the card member;

an engaging mechanism which is provided between the slider and the card member for engaging the card member with the slider; and

a cam mechanism which is provided between the slider and the card holding member, and which, in response to the operation of pushing in the card member, positions and holds the slider in the contact position where the card member is held by the card holding member with the card-side terminals being in contact with the mother-apparatus-side terminals, and in the insertion/withdrawal allowing position where the card member can be inserted into or extracted from the card holding member;

wherein the cam mechanism is composed of a cam protrusion that protrudes from a cam member provided in the slider and of a cam groove that is formed on the internal wall of the card holding member in opposition to the cam protrusion so as to hold the card member in the contact position and in the insertion/withdrawal allowing position; and

the engaging mechanism is composed of an engaging protrusion provided in the slider and of an engaging indention formed on the wall face of the card member in opposition to the engaging protrusion so as to engage with the engaging protrusion.

US 6,332,791 B1

CARD CONNECTOR WITH CARD-EJECTING DEVICE

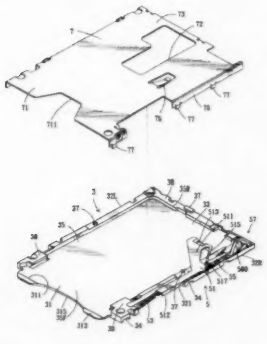
Leland Wang, Taipei; Wen-Yen Liu, Taoyuan Hsien; Chan-Ming Hsu, Chung-Li; Fang-Ping Wang, Hsinchu, and Shun-Jung Chuang, Ping-Chen, all of Taiwan, assignors to FCI Taiwan Limited, Taoyuan Hsien, Taiwan

Filed Mar. 20, 2001, Appl. No. 811,409

Claims priority, application Taiwan, Sep. 29, 2000, 089216937

Int. Cl. H01R *13/62*

U.S. Cl. 439—159 **10 Claims**



1. A card connector adapted for insertion of a card therein, the card having a front end and a rear end, said connector comprising:

an elongated base plate having a first side surface, a front end, a rear end, a left side, a right side, and an accommodating groove that is formed in said first side surface of said base plate and that extends from said front end of said base plate to said rear end of said base plate, said groove having an open front end and a closed rear end and being adapted to receive the card therein in such a manner that the card is disposed at a retracted position, where the front end of the card extends from said open front end of said groove and where a space is present between the rear end of the card and said closed rear end of said groove;

a card-ejecting device adapted to push the card outwardly relative to said groove to an extended portion in a longitudinal direction of said base plate when the front end of the card is pressed inwardly within said groove to move the rear end of the card to said closed rear end of said groove, and is subsequently released; and

a retainer for retaining said card-ejecting device on said base plate;

wherein said card-ejecting device includes:

a slide slot formed in said right side of said base plate and extending along length of said base plate;

a movable member, which is formed with an integral positioning element that is adapted to abut against the rear end of the card so as to move said movable member and the card synchronously when the card is pressed inwardly relative to said base plate, said movable member being retained at a first position, where the card is disposed at the retracted position, and being moved, when the front end of the card is pressed inwardly relative to said base plate to move the rear end of the card to said closed rear end of said groove and is subsequently released, to a second position, where the card is disposed at the extended position where the front end of the card can be pressed inwardly once again relative to said base plate to move the rear end of the card to said closed rear end of said groove, and subsequently released, thereby biasing the card to the retracted position by means of said card-ejecting device, said movable member being disposed slidably within said slide slot and being slidable relative to said base plate in the longitudinal direction of said base plate, said movable member being formed with an integral first resilient arm;

a spring disposed between said movable member and said base plate for biasing said movable member to move forward on said base plate;

a link rod having a front end that is connected pivotally to said movable member, and a rear end with an integral tongue that extends perpendicularly therefrom, said first resilient arm of said movable member pressing against said link rod, thereby biasing said link rod to rotate in a predetermined direction; and

a guide slot formed in said first side surface of said base plate for receiving said tongue of said link rod slidably therein, said guide slot having an annular slot portion and a longitudinal front slot portion that extends forward from a portion of said annular slot portion and that has a rear end, and a closed front end, said tongue of said link rod being biased by said spring to said front end of said longitudinal front slot portion when said movable member is located at said second position, said annular slot portion having

a generally straight left slot portion extending rearward and leftward from said rear end of said longitudinal front slot portion and having a rear end,

a generally V-shaped rear slot portion extending rightward from said rear end of said left slot portion and having a left end, a right end, and a curved middle portion that is located midway between and in front of said left and right ends, said tongue of said link rod being disposed at said curved middle portion when said movable member is located at said first position, and

a generally straight right slot portion extending forwardly and rightward from said right end of said rear slot portion to said rear end of said longitudinal front slot portion, said tongue being movable from said curved middle portion of said V-shaped rear slot portion to said right end of said V-shaped rear slot portion by pressing

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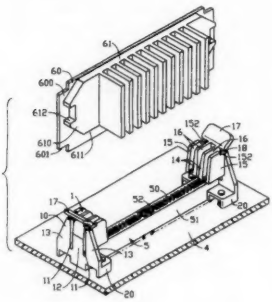
inward the front end of the card so as to move the rear end of the card to said closed rear end of said groove, after which said tongue is biased, upon release of the card, by said spring and said first resilient arm to said front end of said longitudinal front slot portion via said right slot portion, said tongue being movable from said longitudinal front slot portion to said left end of said V-shaped rear slot portion via said left slot portion by pressing inward the front end of the card so as to move the rear end of the card to said closed rear end of said groove, after which said tongue is biased, upon release of the card, by said spring and said first resilient arm to said curved middle portion of said V-shaped rear slot portion.

US 6,332,792 B1
RETENTION DEVICE
Wei-Chung Lin, and Shun-Chi Tung, both of Tu-Chen, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan
Filed Oct. 13, 1999, Appl. No. 418,186
Claims priority, application Taiwan, Jul. 2, 1999, 88211058 U
Int. Cl. H01R *13/62*
U.S. Cl. 439—160 **13 Claims**



1. An electrical system comprising:

an electrical connector including a dielectric housing and a plurality of contacts received in the housing;

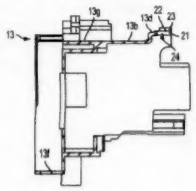
a pair of retention mechanisms positioned on opposite ends of the electrical connector, each retention mechanism including a base and a wall upwardly extending from the base, the wall defining a pair of grooves to divide the wall into a pair of sidewall portions and a central wall portion, a pair of central blades, and a pair of side blades inwardly extending from the central wall portion and the sidewall portions, respectively; and

a combination of a daughter card and a heat sink mounted on the daughter card, opposite side edges of the daughter card and the heat sink being accommodated between the central blades and between one central blade and one side blade, respectively, the daughter card being electrically connected to the contacts in the housing;

the central wall portion and the central blades of each retention mechanism being outwardly deflectable relative to the sidewall portions and the side blades upon insertion of the daughter card and the heat sink combination to the electrical connector and being then movable inwardly to lock the daughter card and the heat sink combination.

US 6,332,793 B1
CABLE REEL
Yasuhiro Hiura, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Jul. 12, 2000, Appl. No. 614,716
Claims priority, application Japan, Jul. 13, 1999, 11-198488
Int. Cl. H01R *35/04*
U.S. Cl. 439—164 **2 Claims**

1. A cable reel having a movable body configured to be fixed to



a steering wheel side of a vehicle and a fixed case mountable on a steering shaft cover configured to be fixed to a vehicle side, a flat cable being housed in a spiral form in an annular cable housing space formed by the movable body and the fixed case, said fixed case comprising:

a peripheral wall extending in a downward axial direction and having a lower fixed wall area, a mounting seat protruding in the form of a step from said lower fixed wall area;

a first groove having a U-shaped notch extending from and having an opening at a lower end of said mounting seat;

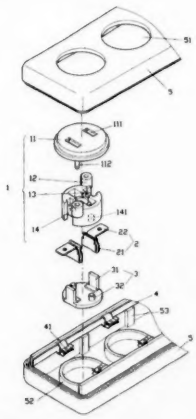
a step which covers an opening of said U-shaped notch;

a second groove having a U-shaped notch extending from an upper side of said step, said first and second grooves forming a bolt hole, said bolt hole having an inner peripheral face, the entire periphery of said inner peripheral face being closed by said first and second grooves; and

a bolt passing through said bolt hole;

whereby a bolt inserted into said bolt hole is fastened into a screw hole of said steering shaft cover, said steering shaft cover interfitting with said fixed wall area, thereby fixing said fixed case onto said steering shaft cover.

US 6,332,794 B1
SWIVELLABLE RECEPTACLE
Nian Mei Tzeng Jeng, No. 1-1. Kuo-Chi Rd., Hsin-Shin Hsiang, Tainan Hsien, Taiwan
Filed May 3, 2000, Appl. No. 563,401
Int. Cl. H01R *29/00*
U.S. Cl. 439—188 **6 Claims**



1. A swivellable receptacle comprising a receptacle housing, a

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swivel device, a conducting device, a fixture and a plurality of conducting strips disposed within said receptacle housing, wherein

said swivel device being secured within said receptacle housing in a rotatable manner and having a plurality of troughs formed therein;

said conducting device comprising a plurality of conductors respectively inserted into said plurality of troughs, each of said conductors having a fin extending outwardly therefrom;

said fixture being coupled to said swivel device with said conducting device therebetween and having a plurality of studs extending therefrom to respectively press against said conductors of said conducting device for adding a bias force thereto;

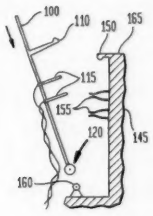
whereby upon insertion of prongs of an electrical plug into said swivel device, said fins of said conducting device are displaceable to respectively engage with said plurality of conducting strips, and said studs of said fixture securely engaging said conducting device to respectively bias said conductors to securely engage said prongs.

US 6,332,795 B1

HINGED CONNECTION SYSTEM

Theodore A. Conorich, Lake Hiawatha, N.J., assignor to Avaya Technology Corp., Basking Ridge, N.J.

Filed May 23, 2000, Appl. No. 575,969
Int. Cl. H01R *29/00*
U.S. Cl. 439—188 **4 Claims**



1. A connector system for telecommunications electrical connections, said system comprising:

a base structure,

a support structure having a rear portion and a front portion, said rear portion of said support structure being attached to said base structure,

a jack affixed to said front portion of said support structure, said jack having a front end positioned near said front portion of said support structure and a rear end extending toward said rear portion of said support structure, said jack having a label surface facing outwardly from said front end, said jack having a latch receptacle located near said front end and a pivot connection located near said rear end,

said support structure forming a wiring trough, said wiring trough being formed adjacent to the rear portion of said support structure and in front of said base structure; and

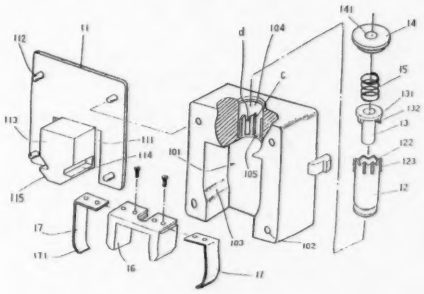
a plug having a pivot end, a latch end and electrical contacts located between said pivot end and said latch end, said plug adapted to be affixed to said jack by means of first establishing a fulcrum point common to said jack and said plug by engaging said pivot end with said pivot connection of said jack, and said plug being rotated about said fulcrum point until an electrical connection is made with said jack and the latch end of said plug mechanically latches with said latch receptacle of said jack, said plug having wiring extending from said pivot end of said plug toward said rear portion of said support structure to pass into said wiring trough wherein said label area is visible without interference from said wiring.

US 6,332,796 B1

STRUCTURE OF A FLUORESCENT TUBE SEAT

Chuan-Ying Chen, PO Box 82-144, Taipei, Taiwan

Filed Oct. 10, 2000, Appl. No. 684,661
Int. Cl. H01R *33/02*
U.S. Cl. 439—226 **2 Claims**



1. A fluorescent light-tube seat structure having a seat body comprising;

a base seat having a front end being provided with a "Π"-shaped recess, and the bottom end of the lateral wall of the recess being a curved surface, and the center area of the top end of the seat body being a cylindrical slot in communication with the "Π"-shaped recess, the bottom end of the cylindrical slot being provided with a protruded edge, and the walls of the cylindrical slot being provided with two kinds of ribs of different height and thickness such that a lower protruded fib is located between two higher ribs, forming three ribs which are spaced apart;

a panel having two parallel straight guiding slots separated with a distance being equal to the distance of the tube pins, and a contacting end provided to the panel being provided with a plurality of insertion pegs and a mounting block being provided in between two guiding slots, the lateral sides of the mounting block being provided with an engaging slot and the bottom edge thereof being tilted toward the interior thereof;

an axle pivotally mounted at the hollow tube body of the cylindrical slot, having the top end formed into 6 wave-like elements and the external of the edge surface of the tube being formed into a plurality of corresponding teeth structures having a rail thereon;

an engaging peg being a hollow peg body mounted onto the top end of the axle, and the top end of the peg being a cap edge having a diameter smaller than that of the cylindrical slot, and the circumferential edge of the cap edge being formed into three engaging teeth structures;

a hole cover having a surface provided with a through hole for wires, and being used to seal the hole on the cylindrical slot;

a spring being urged between the top end of the engaging peg and the hole cover;

a "Π"-shaped member mounted at the bottom end of the axle and located in between the mounting block and the "Π"-shaped recess;

two conducting copper plates having a section at the bottom end thereof formed into an arch-shaped structure, and respectively mounted at the sides of the "Π"-shaped member.

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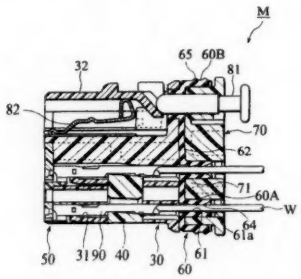
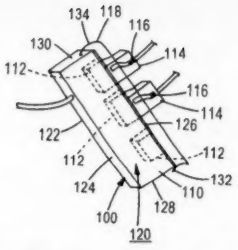
US 6,332,797 B1
WATERPROOF CONNECTOR
Naoto Taguchi, and Tohru Kurosawa, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Oct. 5, 2000, Appl. No. 680,504
Claims priority, application Japan, Oct. 13, 1999, 11-291113
Int. Cl. H01K *13/52*
U.S. Cl. 439—275 **10 Claims**



1. A waterproof connector comprising:
a connector housing having a terminal receiving chamber;
a waterproof seal member attached to a rear end of said connector housing, said seal member comprising a mat-shaped portion having a front surface contact with the rear end of said connector housing and a rear surface, an electric wire seal portion forming at least one wire receiving hole extending through the mat-shaped portion, and a connector seal portion forming a thin outer peripheral wall around a periphery of the mat-shaped portion and extending from said rear surface of said mat-shaped portion of said seal member, said connector seal portion being configured to seal between two connector housings when said connector housing is fit to an opposing connector housing;
a rear holder for pressing said waterproof seal member to the connector housing; and
an electric wire extending rearward from a terminal inserted to said terminal receiving chamber, the electric wire seal portion closely attached to an outer periphery of the wire so as to seal between the electric wire and the connector housing;
wherein the connector seal portion of said waterproof seal member is provided on an outer peripheral surface of at least one of said connector housing and said rear holder in an exposed manner so as to be closely attached to an inner periphery of a hood portion of the opposing connector housing at a time of fitting said connector housing to the opposing connector housing.

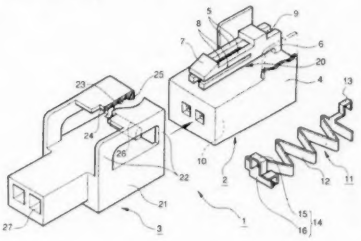
US 6,332,798 B1
RJ-45 JACK MODULE WITH SIMULTANEOUS PLUG RELEASE
Rizwan M. Farooq, Santa Clara, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Oct. 20, 2000, Appl. No. 691,914
Int. Cl. H01R *16/635*
U.S. Cl. 439—352 **10 Claims**

1. A device for receiving RJ plugs, each RJ plug having a lever arm movable from a locked position to a released position the device comprising:
a body having a plurality of jacks therein, each jack being constructed and arranged to receive at least a portion of an RJ plug therein, and



a plug releasing mechanism mounted with respect to said body and being constructed and arranged such that when at least two of the RJ plugs are disposed in the locked position in two corresponding said jacks, movement of said plug releasing mechanism to an actuating position engages the lever arm of each of said plugs, moving said lever arms to said released position generally simultaneously.

US 6,332,799 B1
HALF-FITTING PREVENTION CONNECTOR
Chieko Torii, and Tomomi Endo, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed May 29, 2001, Appl. No. 865,684
Claims priority, application Japan, May 29, 2000, 12-158530
Int. Cl. H01R *13/627*
U.S. Cl. 439—352 **6 Claims**



1. A half-fitting prevention connector, comprising:
a first connector including a first housing;
a flexible lock arm formed on the first housing, the flexible lock arm having a first retaining portion and a slide slot which is formed in the flexible lock arm so as to extend from a tip of the flexible lock arm;
a second connector fittable to the first connector, the second connector including a second housing having a second retaining portion and a stopper portion; and
a spring member attachable to the first housing, the spring member including:
a resilient portion, a rear end portion of which is fixedly secured to the first housing, and
a slide member integrally formed with a front end portion of the resilient portion, the slide member including an abutment portion and a guide frame which is slidably guided in the slide slot of the flexible lock arm,
wherein when the first connector and the second connector are about to be fitted to each other, the flexible lock arm is flexed while causing the abutment portion of the slide member to abut against the stopper portion of the second housing,
wherein when the first connector and the second connector are incompletely fitted, the first connector and the second connector are released in a direction opposite to a connector fitting direction in accordance with a resilient force of the resilient portion of the spring member, and
wherein when the first connector and the second connector are completely fitted to each other, the first retaining portion of the flexible lock arm is retained by the second retaining portion of the second housing.

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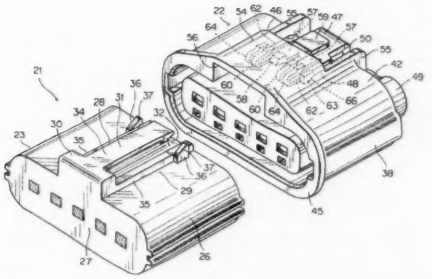
US 6,332,800 B2
CONNECTOR ASSEMBLY HAVING INERTIA LOCKING MECHANISM
Shinji Kodama, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Apr. 24, 2001, Appl. No. 840,187
Claims priority, application Japan, May 25, 2000, 12-155237
Int. Cl. H01R *13/627*
U.S. Cl. 439—357 **5 Claims**



1. A connector assembly having a lock mechanism using an inertia force, the connector assembly comprising:

a first connector and a second connector which are mated with each other,

wherein the first connector has a first lock portion and a first inertia locked portion, and the second connector has a second lock portion and a second inertia locked portion, the first lock portion engaged with second lock portion, the first inertia locked portion engaged with the second inertia locked portion, the first lock portion having a first locking piece and a push piece that moves the first locking piece, the first inertia locked portion having a lock arm provided with a second locking piece, the lock arm being deflectable independently from the first lock portion, the second lock portion having a third locking piece that engages with the first locking piece after abutment thereof or when the push piece is depressed, the second inertia locked portion having a fourth locking piece abutted against the second locking piece.

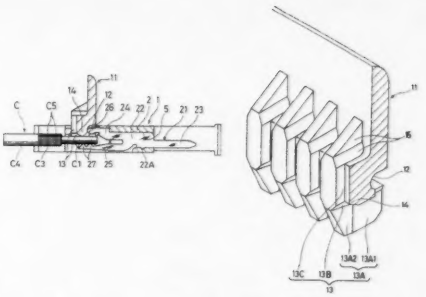
US 6,332,801 B1
INSULATION REPLACEMENT ELECTRICAL CONNECTOR
Satoshi Watanbe, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Aug. 31, 2000, Appl. No. 650,994
Claims priority, application Japan, Sep. 1, 1999, 11-247574; Dec. 20, 1999, 11-376842; May 16, 2000, 12-143826; Jun. 22, 2000, 12-227963
Int. Cl. H01R *4/24*
U.S. Cl. 439—409 **5 Claims**

1. An electrical connector comprising:

a housing made of a electrical material;

at least one contact element supported by said housing arid made of a metal, said contact element having a shaft section and a contact section including teeth;

a press member rotatable between a closed position and an open position with respect to said housing and having a press section for pressing a cable to said contact section at said closed position, said press member having a concave bearing section for receiving said shaft section, wherein



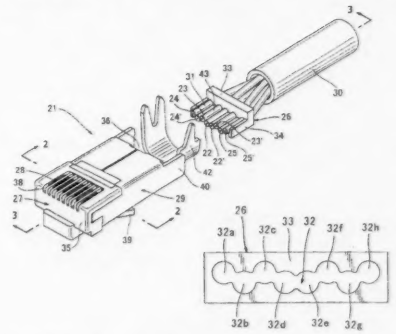
a cable receiving groove Is provided on a surface of said press member which is opposed to said contact section, said cable receiving groove comprising:

a guiding section which faces said contract section when said press member is at said open position;

a retention section which faces said contact section when said press member is at said closed position; and

a transition section provided between said guiding and rotation sections and having a width which gradually decreases from said guiding section to said retention section, wherein said cable is easily inserted into said cable receiving groove through said guiding section and being supported by said transition suction and said retention section while said pressing member is rotated from said open position to said close position, thus firmly press-fitting said cable to said teeth of said contact section of said contact element.

US 6,332,802 B2
MODULAR PLUG AND HARNESSED PLUG
Kenichi Hirokawa, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Mar. 21, 2001, Appl. No. 813,000
Claims priority, application Japan, Mar. 23, 2000, 12-081460
Int. Cl. H01R *4/24*
U.S. Cl. 439—418 **6 Claims**



1. A modular plug comprising:

a guide plate having guide apertures capable of arranging four pairs of wires in at least upper and lower rows;

a housing for receiving said guide plate;

four pairs of terminals provided at positions corresponding to said guide apertures;

said guide aperture being arranged such that wires of a first pair are provided next to each other, wires of a second pair are spaced across said first pair in the same row, wires of a third pair are provided outside a wire of said second pair, and wires of a fourth pair are provided outside the other wire of said second pair,

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wherein an outside wire of said third pair, an outside wire of said fourth pair, and said wires of said second pair are provided in one of said two rows while an inside wire of said third pair, an inside wire of said fourth pair, and said wires of said first pair are provided in the other row.

US 6,332,803 B1

FEMALE CONNECTOR

Hirokazu Matsuda, and Hajime Kawase, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

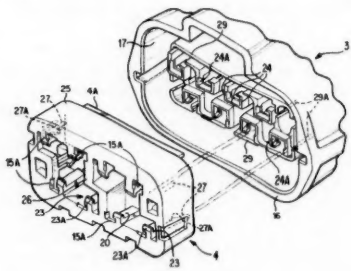
Continuation of application No. 09/121,035, filed on Jul. 23, 1998, now Pat. No. 6,123,574. This application Sep. 26, 2000, Appl. No. 670,030.

Claims priority, application Japan, Jul. 29, 1997, 9-203547

This patent is subject to a terminal disclaimer.

Int. Cl. H01R *3/00*

U.S. Cl. 439—488 **15 Claims**



1. An electrical connector comprising:

a female terminal fitting with a connecting member connectable to a male tab of a corresponding terminal fitting, and a protruding member protruding in a lateral direction away from the connecting member; and

a connector housing having an anterior face and a terminal housing chamber for housing the female terminal fitting, said anterior face including a tab through hole with a peripheral edge for allowing the male tab to be passed therethrough and coupled to the connecting member, a detecting hole in communication with the terminal housing chamber for allowing the insertion of a detecting pin for detecting the correct attachment of the female terminal fitting within the terminal housing chamber by making direct contact with the protruding member, and a partition extending between the tab through hole and the detecting hole along the anterior face, said partition isolating the detecting hole from the peripheral edge of the tab through hole such that the tab through hole does not communicate with the detecting hole along the anterior face.

US 6,332,804 B2

CONNECTOR

Naoya Kurimoto, and Yukinori Saka, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

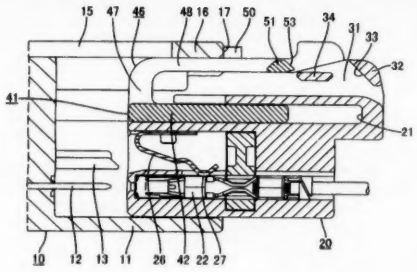
Filed Dec. 1, 2000, Appl. No. 726,385

Claims priority, application Japan, Dec. 3, 1999, 11-345051

Int. Cl. H01R *3/00*

U.S. Cl. 439—489 **11 Claims**

1. An electrical connector comprising a housing having an anterior side, terminals at the anterior side for engagement with a corresponding connector, and a resilient locking arm having a protrusion engageable with a corresponding connector to maintain said housing in a latched condition with a corresponding connector



when fully fitted together, said housing further including a slider having an abutment for contact with a corresponding connector, said slider being movable towards and away from the anterior side, and spring means to urge the slider to the anterior side, wherein the locking arm is provided on and movable with said slider.

US 6,332,805 B2

STRUCTURE FOR CONNECTING FLAT CIRCUIT MEMBER

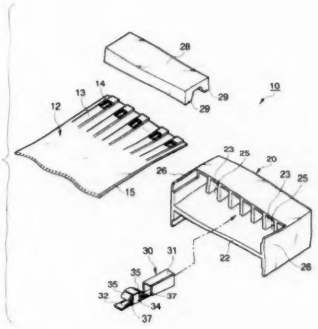
Hiroshi Aoki, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Mar. 5, 2001, Appl. No. 797,808

Claims priority, application Japan, Mar. 3, 2000, 12-058982

Int. Cl. H01R *12/24*

U.S. Cl. 439—495 **4 Claims**



1. A structure for electrically connecting a flat circuit member to a terminal, comprising:

a terminal;

a flat circuit member attachable to the terminal, the flat circuit member having a through hole portion therethrough;

a conductor portion having a portion penetrated by the through hole portion in a thickness direction of the conductor portion, the conductor portion being disposed on a surface of the flat circuit member;

a guide portion formed on the terminal;

an inserting portion insertable in the through hole portion of the flat circuit member, the inserting portion being connected to the guide portion; and

a pressing piece extending from a distal end of the inserting portion,

wherein the flat circuit member is electrically connected to the terminal, so that the inserting portion of the terminal is inserted in the through hole portion of the flat circuit member,

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the guide portion of the terminal extends along a rear surface of the flat circuit member, and the pressing piece extends toward the conductor portion of the flat circuit member and presses the flat circuit member toward the guide portion.

US 6,332,806 B1
FIXING APPARATUS

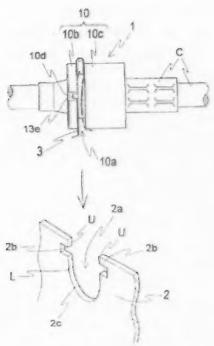
Katunori Yasui, and Takashi Ishikawa, both of Takarazuka, Japan, assignors to Nippon Cable System Inc., Takarazuka, Japan

Division of application No. 08/975,201, filed on Nov. 20, 1997, now Pat. No. 6,171,141. This application Nov. 17, 2000, Appl. No. 714,097.

Claims priority, application Japan, Nov. 25, 1996, 8-313932; Oct. 30, 1997, 9-298848

Int. Cl. H01A *13/73;* **H02B** *1/01;* **H01R** *13/627;13/66;13/60*

U.S. Cl. 439—545 **3 Claims**



1. A fixing apparatus for non-detachably fixing a terminal fixing metal fixture provided on a control cable to a bracket means provided in a given position of a vehicle, wherein said terminal fixing metal fixture has a substantially cylindrical shape and comprises a main body with a groove on a peripheral surface of the main body by which a first portion and a second portion are defined, said fixing apparatus comprising a spacer having substantially inverse U shape in section, said spacer functioning as a fixing means;

wherein said spacer comprises:

a first including portion interposed between one of said first portion and said second portion and said bracket means in case where said spacer is provided on said bracket means;

a second including portion being continuous to said first including portion, said second including portion being interposed between the other one of said first portion and said second portion and said bracket means in case where said spacer is provided on said bracket means;

a tongue piece engaged with a slit formed in said bracket means in case where said spacer is provided on said bracket means; and

an urging means which is bent by said first portion as said terminal fixing metal fixture is received by said spacer, said urging means returning to an original shape based on a resilient force of the same when said spacer engages said fixture for fixedly retaining said terminal fixing metal fixture.

US 6,332,807 B1
CONNECTION STRUCTURE AND CONNECTION METHOD BETWEEN SHIELD ELECTRIC WIRE AND SHIELD TERMINAL

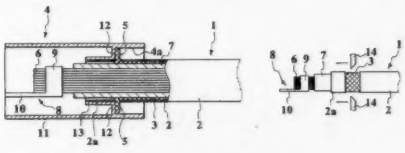
Nobuyuki Asakura, and Yasumichi Kuwayama, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 5, 2000, Appl. No. 564,802

Claims priority, application Japan, May 7, 1999, 11-127549

Int. Cl. H01R *9/05*

U.S. Cl. 439—578 **13 Claims**



1. A connection structure between a shield terminal and a shield electric wire, comprising:

a shield electric wire having braided wires, an outer insulating portion for covering the braided wires, and a connecting portion formed by part of the braided wires, the connecting portion having a rib-like configuration formed by drawing up the braided wires to an end of the outer insulating portion and collecting them together so as to extend and expose from the end of the outer insulating portion; and

a shield terminal connected to the connecting portion.

US 6,332,808 B1
CONNECTOR STRUCTURE

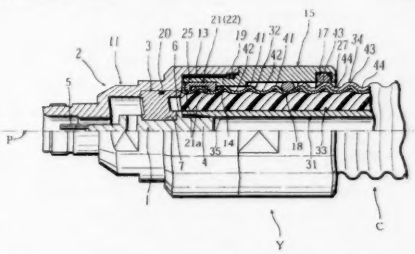
Takayoshi Kanda, and Nobuyoshi Matsuda, both of Fukui, Japan, assignors to Mitsubishi Cable Industries, Ltd., Amagasaki, Japan

Filed Sep. 19, 2000, Appl. No. 664,742

Claims priority, application Japan, Sep. 22, 1999, 11-269281; Feb. 25, 2000, 12-049415

Int. Cl. H01R *9/05*

U.S. Cl. 439—584 **1 Claim**



1. A connector structure provided with a coaxial cable coaxially having an inner conductor and an outer conductor respectively insulated, and a coaxial connector having an inner contact and an outer contact respectively connected to the inner conductor and the outer conductor, wherein the outer conductor is formed into a wavy loop covered with a covering member and having ridge portions and root portions, the outer contact has a first loop of sealing material fitted inside the outer contact, the first sealing material is press-fitted to the covering member, and the outer contact is connected to the outer conductor so as to cover the outer conductor, comprising a construction in which the center of the first sealing material is disposed on a position of a peak of a ridge portion of the covering member, a second sealing material is disposed radially inner to the first sealing material in the outer contact, and the second sealing material is press-fitted to the root portion of the outer conductor where the covering member is removed.

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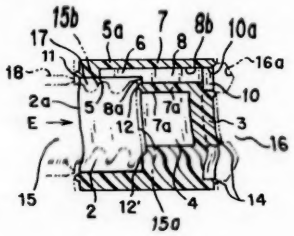
US 6,332,809 B1

WATERPROOF CONNECTOR

Hisashi Tsukamoto, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 16, 2000, Appl. No. 688,095
Claims priority, application Japan, Oct. 18, 1999, 11-295015
Int. Cl. H01R *13/40*
U.S. Cl. 439—589 **3 Claims**



1. A waterproof connector comprising:

a main chamber and a sub-chamber continuously formed in a connector housing of the waterproof connector with a step therebetween;

a hole for introducing rubber penetratingly formed inside a wall of the sub-chamber arising from the step and communicating with a base of the connector housing; and

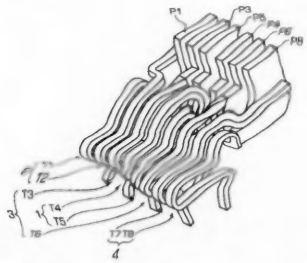
a packing made of the rubber formed in one body in the main chamber and at the base of the connector housing.

US 6,332,810 B1

MODULAR TELECOMMUNICATION JACK-TYPE CONNECTOR WITH CROSSTALK REDUCTION

Baudouin Charles Francis Denis Marie Bareel, Brussels, Belgium, assignor to Nexans, Paris, France

Filed Oct. 20, 2000, Appl. No. 692,046
Claims priority, application European Pat. Off., Oct. 29, 1999, 99402703
Int. Cl. H01R *24/00*
U.S. Cl. 439—676 **5 Claims**



1. Modular telecommunication jack-type connector comprising a dielectric housing means (5) including a plug-receiving area (6), a plurality of terminals (T1–T8) mounted on the housing means and a crosstalk compensation arrangement (P1, P3, P5, P4, P6, P8), the terminals of said plurality being mounted in parallel into said housing means and each terminal including a spring beam contact portion (S4, S6) extending in cantilever fashion within the plug-receiving area, said contact portion having a first end extending to a curved base portion (C4, C6) located in the housing means and being coupled to external connections (E4, E6) of the modular connector,

said crosstalk compensation arrangement comprising metallic plates (P4, P6) connected to said terminals (T4, T6), wherein at least one other pair of terminals is associated to plates overlapping each other in parallel planes in order to define a physical capacitor between the associated other pair of terminals,

wherein the metallic plates (P4, P6) of said cross talk compensation arrangement are connected to a second end (X4, X6), opposite to said first end (C4, C6), of the spring beam contact portion (S4, S6) of said terminals (T4, T6),

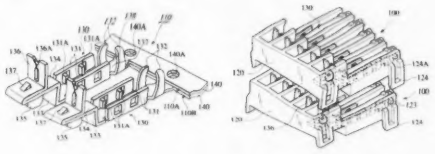
and wherein the curved base portion of said terminals is directly connected to said external connections (E4, E6) of said modular connector.

US 6,332,811 B1

JOINT CONNECTOR AND METHOD OF MANUFACTURING METAL FITTINGS FOR CONNECTION WITH THE JOINT CONNECTOR

Kei Sato, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Dec. 6, 1999, Appl. No. 456,068
Claims priority, application Japan, Dec. 7, 1998, 10-347061
Int. Cl. H01R *13/502*
U.S. Cl. 439—701 **6 Claims**



1. A joint connector comprising:

a metal fittings assembly including an upper terminal and a lower terminal in a stacked relationship, each terminal having a band-shaped carrier extending in a longitudinal direction and a plurality of terminal units connected in a direction perpendicular to the carrier, the terminals arranged in parallel with each other along the longitudinal direction of the carrier; and

a housing having a plurality of unit accommodating parts formed for accommodating the terminal units of the terminals therein;

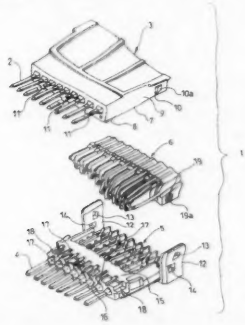
wherein the upper and lower terminals are joined such that the terminal units from the upper terminal alternate with the terminal units from the lower terminal along the longitudinal direction of the upper and lower terminal carriers, wherein the upper and lower terminal carriers are welded to each other; and

wherein either one of the upper and lower terminals is provided, at respective joint portions between the carrier and the terminal units, with bending parts formed by bending the joint portions by a plate thickness of the carrier of the other terminal, thereby positioning the adjoining terminal units of the terminals in an identical horizontal plane,

wherein each of the terminal units has a connecting piece formed on a leading end portion of the terminal unit so as to project upward and an inserting piece formed on the leading end portion so as to extend downward, the connecting piece being engageable with the inserting piece of the other terminal unit.

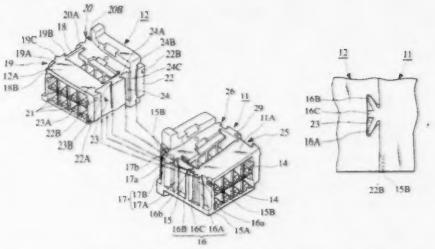
MISSING PATENTS FROM DECEMBER 25, 2001 OFFICIAL GAZETTE ISSUE

US 6,332,812 B1
CONNECTOR ASSEMBLY
Hitoshi Kazuhara, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jun. 27, 2000, Appl. No. 604,464
Claims priority, application Japan, Jun. 28, 1999, 11-182035
Int. Cl. H01R *13/502;13/514*
U.S. Cl. 439—701 **3 Claims**



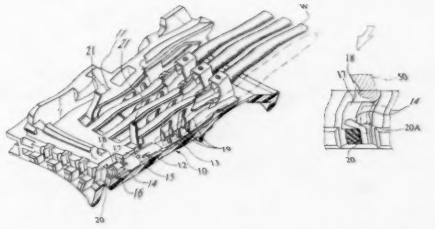
1. A connector, comprising:
a lower connector housing having a first engagement portion;
an upper connector housing stackable on and combinable with the lower connector housing, the upper connector housing having a second engagement portion;
a plurality of terminals insertable into the upper and lower connector housings, the terminals extending in a common direction when the upper and lower connector housings are completely combined together;
at least one dovetail groove formed in one of the first and second engagement portions;
at least one elongate projection formed on the other one of the first and second engagement portions, the at least one elongate projection being fitted in the at least one dovetail groove while the upper connector housing is slid relative to the lower connector housing in an extending direction of the terminals, wherein the upper connector housing has one of a projection and a hole at a rear end portion thereof, the lower connector housing has the other one of the projection and the hole at a rear end portion thereof, the upper connector housing has the second engagement portion at a front end portion thereof, and the lower connector housing has the first engagement portion at a front end portion thereof, and wherein the upper connector housing is slid relative to the lower connector housing in the extending direction of the terminals, and is completely combined with the lower connector housing, so that the at least one elongate projection is fitted in the at least one dovetail groove, and the projection and the hole are engaged with each other; and
a cover attachable between the upper and lower connector housings so as to partially cover the terminals respectively arranged in the upper and lower connector housings.

US 6,332,813 B1
JOINING STRUCTURE OF CONNECTOR
Toshiaki Okabe, and Tetsuya Yamashita, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Aug. 1, 2000, Appl. No. 631,105
Claims priority, application Japan, Aug. 2, 1999, 11-219211
Int. Cl. H01R *13/502*
U.S. Cl. 439—701 ***12 Claims***



1. A joining structure of a connector comprising:
one connector having a plurality of engaging portions; and
another connector having the same number of engaging portions as the number of the plurality of engaging portions in the one connector, the plurality of engaging portions in the one connector and the plurality of engaging portions in the another connector being mutually corresponded so as to form a plurality of engaging pairs,
wherein the plurality of engaging portions in the one connector and the plurality of engaging portions in the another connector respectively have shapes so that respective engaging portions can correspondingly engage with each other so as to form the plurality of engaging pairs in the case that the one connector and the another connector are joined in a proper direction, and at least one of pairs between the plurality of engaging portions in the one connector and the plurality of engaging portions in the another connector can not engage with each other in the case that the one connector and the another connector are joined in an improper direction,
wherein the one connector has a positioning recess portion, the another connector has a positioning protruding portion, the plurality of engaging portions in the one connector have an engaging piece, and the plurality of engaging portions in the another connector have a groove portion corresponding to the engaging piece,
and wherein as the one connector and the another connector are adapted to be joined in the proper direction, the engaging piece is pressure contacted to the side wall of the groove portion so as to be elastically deformed in a state that the positioning protruding portion rides over the side surface of the one connector so as to engage with the side surface, and then the engaging piece elastically keeps an engaging state between the positioning recess portion and the positioning protruding portion in a state that the positioning recess portion and the positioning protruding portion are engaged with each other.

US 6,332,814 B2
CRIMP CONNECTOR WITH UNIFORM BENDING DIE
Kei Sato, and Toshiaki Ozawa, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Mar. 2, 2001, Appl. No. 796,589
Claims priority, application Japan, Mar. 3, 2000, 12-059162
Int. Cl. H01R *13/415*
U.S. Cl. 439—741 ***4 Claims***



1. A crimp connector wherein a crimp contact is inserted into a contact slot of a connector housing from the backside to the front side thereof comprising:

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a contact draw-out constraint wall facing forward, the contact draw-out constraint wall being formed in the contact slot of said connector housing;

a protrusion formed on the crimp contact, the protrusion being *linked with said draw-out constraint wall to restrain the crimp contact from backward draw-out, said protrusion being* capable of being bent with a bending jig; and

a receiving stand formed within a space in front of said contact *draw-out constraint wall, said receiving stand defining a bend-*ing position as a bending die when said protrusion is bent with said bending jig.

US 6,332,815 B1

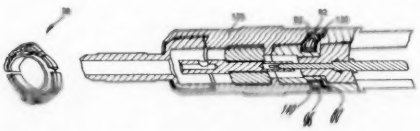
CLIP RING FOR AN ELECTRICAL CONNECTOR

Burton B. Bruce, New Hartford, Conn., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Dec. 10, 1999, Appl. No. 458,082

Int. Cl. H01L 13/627

U.S. Cl. 439—862 **1 Claim**



1. An electrical joint, comprising:

a male electrical connector,

a mating female electrical connector; and

a resilient electrically conductive clip ring for electrically connecting an outer diameter of said male connector with an *inner diameter of said female connector, said clip ring com-*prising:

an annular-shaped body having an inner wall and an outer wall; said inner wall engaging said outer diameter of said male con-*nector,*

said outer wall having a plurality of circumferentially spaced slots and said inner diameter of said female connector, said outer wall being operatively elastically flexible radially *inwardly toward said inner wall when said clip ring is brought* by said male connector into an interior of said female connector;

wherein said outer wall is received within a first groove formed in said inner diameter of said female connector; and

said outer wall includes a first section angled to form a lead-in section when said clip ring is inserted into said first groove *and a second section angled to form a lead-out section when* said clip ring is removed from said first groove.

US 6,332,816 B1

JET-PROPELLED BOAT

Masahiko Tsuchiya, and Tomohisa Abe, both of Saitama, *Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha,* Tokyo, Japan

Filed Jun. 22, 2000, Appl. No. 598,951

Claims priority, application Japan, Jun. 22, 1999, 11-175296

Int. Cl. B63H *11/113; 11/107*

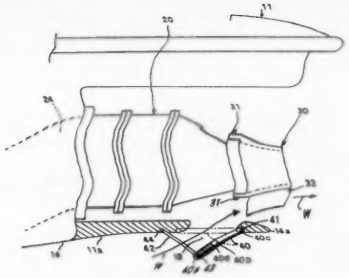
U.S. Cl. 440—40 **20 Claims**

1. A jet-propelled boat comprising:

a boat hull;

a first water channel located adjacent a lower portion of said boat hull;

a jet pump located in said water channel;



a nozzle having a water input, a water output and an outer *surface formed between said input and said output, said* nozzle being located at an end of said water channel, and said nozzle including a rudder attached to said outer surface of said nozzle; and

a second water channel separate from said first water channel, said second water channel directing a water flow toward said rudder.

US 6,332,817 B1

TRIM-TILT DEVICE FOR MARINE PROPULSION UNIT

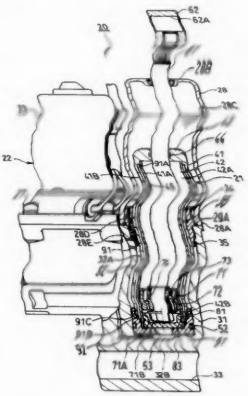
Tamotsu Nakamura, Saitama, Japan, assignor to Showa Corporation, Japan

Filed Apr. 19, 2000, Appl. No. 552,095

Claims priority, application Japan, Apr. 20, 1999, 11-112856

Int. Cl. B63H 5/125

U.S. Cl. 440—61 **2 Claims**



1. A trim-tilt device for a marine propulsion unit wherein a cylinder device is adapted to be mounted between a hull and the marine propulsion unit freely tiltably supported by the hull; and *wherein a hydraulic fluid is supplied from a hydraulic fluid supply/* discharge device into the cylinder device and discharged from the cylinder device into the hydraulic fluid supply/discharge device to *thereby expand and contract the cylinder device* and thereby trim and tilt the marine propulsion unit,

the cylinder device comprising a cylinder connected to one of the hull and the marine propulsion unit and a piston rod *connected to the other thereof,*

the cylinder of the cylinder device being covered with a tank constituting the hydraulic fluid supply/discharge device, and the cylinder being disposed in a hydraulic fluid of the tank.

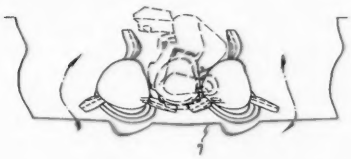
MISSING PATENTS FROM DECEMBER 25, 2001 OFFICIAL GAZETTE ISSUE

US 6,332,818 B1

PROPULSION SYSTEM

Ian James Duncan, and Hugo Anthony Duncan, both of Livingston, United Kingdom, assignors to Futuretech Technologies Limited, Kent, United Kingdom

PCT No. PCT/GB99/00388, § 371 Date Aug. 4, 2000, § 102(e) Date Aug. 4, 2000, PCT Pub. No. WO99/39973, PCT Pub. Date Aug. 12, 1999
PCT Filed Feb. 5, 1999, Appl. No. 601,721
Claims priority, application United Kingdom, Feb. 7, 1998, 9802570
Int. Cl. B63H 1/18; 1/00; 3/00
U.S. Cl. 440—66 38 Claims



1. A propulsion system for a water craft, the system comprising:

at least one shaft which extends rearwardly from the transom of the hull of the water craft;

a surface-piercing propeller mounted on said at least one shaft, proximal to a trailing edge of the hull, so that said propeller operated, in use, in a transom cavity created behind the transom of the hull; and

drive means for driving said at least one shaft;

wherein said propeller comprises a hub and a plurality of blades angularly spaced apart, substantially equidistantly, therearound, the ratio of the spacing of the blades to the blade chord being at least 2.0 along substantially the whole length of the blades, and

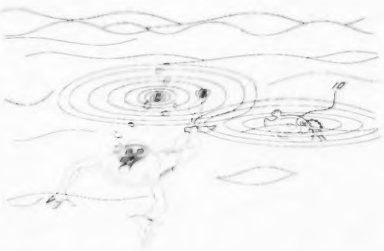
wherein the end profile of the hull of the craft comprises at least one convex, generally arcuate profile projection which corresponds generally to the profile of the hub of the propeller.

US 6,332,819 B1

OBJECT RETRIEVAL DEVICE USED IN WATER

Jerrold K. Emmons, 1024 Brooks End Ct., Columbus, Ohio 43204

Provisional application No. 60/158,231, filed on Oct. 8, 1999.
This application Sep. 29, 2000, Appl. No. 672,988.
Int. Cl. B63B 22/00
U.S. Cl. 441—1 6 Claims



1. A device for retrieving items submergible in water, said device comprising:

a body made of an expandable material and having an outer surface configured to define a fish appearance, said body defining an internal cavity and a set of apertures;

at least one band disposed within the cavity of said body, said band containing a chemical that generates a gas upon reaction with water;

a thin outer layer resembling a fish gill and a thin inner layer, said inner and outer layers covering each of the apertures, said outer layer allowing water to enter the cavity of said body and said inner layer preventing escape of the gas generated within the cavity when the water reacts with said chemical;

means for releasing pressure produced within the cavity of the body when the gas is generated; and

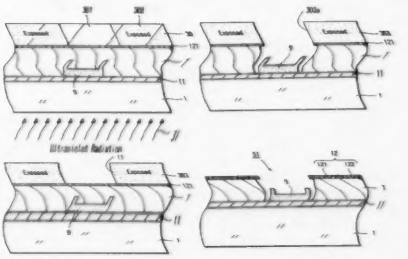
means for attaching a retrievable item to said body.

US 6,332,820 B1

PLANAR DISPLAY DEVICE MANUFACTURING METHOD

Toshiki Shimamura, and Kouji Inoue, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jan. 18, 2000, Appl. No. 484,229
Claims priority, application Japan, Jan. 20, 1999, 11-012235
Int. Cl. H01J 9/02
U.S. Cl. 445—24 14 Claims



1. A method for manufacturing a planar display device comprising the steps of:

forming a first electrode and an electron emitting portion on said first electrode on a surface of a substrate, forming an insulating layer on an area including said first electrode and said electron emitting portion, and forming an electrode layer serving as a second electrode on said insulating layer;

forming a negative type photoresist layer on the entire surface including said electrode layer, exposing said photoresist layer from the back of the substrate by using said electron emitting portion as a mask, and selectively removing said photoresist layer at a portion corresponding to said electron emitting portion by developing said photoresist layer; and

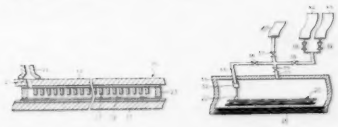
selectively etching said electrode layer and the insulating layer by using said remaining photoresist layer as a mask.

US 6,332,821 B1

METHOD FOR FABRICATING PLASMA DISPLAY DEVICE

Deuk-il Park; Moo-sung Kim, and Choong-yop Rhew, all of Chonan, Rep. of Korea, assignors to Samsung SDI Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 15, 1999, Appl. No. 461,327
Claims priority, application Rep. of Korea, Dec. 15, 1998, 98-55031
Int. Cl. H01J 9/26
U.S. Cl. 445—25 14 Claims



1. A method for fabricating a plasma display device comprising:

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OFFICIAL GAZETTE ISSUE

installing in a heating chamber a plasma display device assembly including upper and lower substrates and frit glass coating *the peripheries of the substrates;*

heating the heating chamber while evacuating the plasma display device assembly and the heating chamber via respective exhaust lines;

bonding the upper and lower substrates of the plasma display device assembly by melting and thereby spreading the frit glass over portions of the upper and lower substrates;

stopping the evacuation and heating of the heating chamber and *cooling the heating chamber;*

filling the heating chamber with a gas to atmospheric pressure when the heating chamber has cooled;

filling the plasma display device assembly with a discharge gas *when the temperature of the plasma display device reaches* room temperature;

connecting a discharge circuit to the plasma display device assembly, producing a discharge in the discharge gas within *the plasma display device assembly with the discharge circuit* and, thereafter, evacuating the discharge gas from the plasma display device assembly;

repeating the filling and evacuation of the plasma display device *assembly with the discharge gas; and*

filling the plasma display device assembly with the discharge gas, and sealing the plasma display device assembly.

7. A method for fabricating a plasma display device comprising:

installing in a heating chamber a plasma display device assembly including upper and lower substrates and frit glass coating the peripheries of substrates;

heating the heating chamber while evacuating the plasma display device assembly and the heating chamber;

repeating more than twice alternating filling of the plasma display device assembly with a discharge gas to a pressure and evacuating the discharge gas from the plasma display device assembly when the heating chamber has cooled to a first temperature;

filling the plasma display device assembly with the discharge gas to a pressure when the temperature of the heating chamber is further cooled to a second temperature, lower than the first temperature;

connecting a discharge circuit to the plasma display device assembly, producing a discharge in the discharge gas within the plasma display device assembly with the discharge circuit and, thereafter, evacuating the discharge gas from the plasma display device assembly;

repeating the filling and evacuation of the discharge gas in the plasma display device assembly more than twice; and

filling the plasma display device assembly with the discharge gas, and sealing the plasma display device assembly.

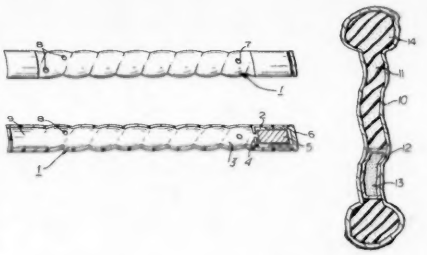
US 6,332,822 B2
SOFT DIVING STICK

Michael Greenberg, Gladstone; Richard J. Greenberg, Warren, and Michael A. Waters, Delran, all of N.J., assignors to Shelcore, Inc., Somerset, N.J.

Filed Jun. 25, 1999, Appl. No. 339,831
This patent is subject to a terminal disclaimer.
Int. Cl. A63H *23/00*
U.S. Cl. 446—153 **9 Claims**

1. An elongated object arranged to be tossed into a body of water, sink to a bottom of the body of water, and rest on the bottom while maintaining an upright posture so that it can easily be retrieved by a diver, comprising:

an outer body made of a soft and malleable enough to prevent impalement of the diver, said outer body including an interior chamber and an exterior opening in communication with the interior chamber, said interior chamber having a volume large enough to accommodate sufficient ingress of water when the outer body is tossed into the body of water to overcome a buoyancy of the outer body, and thereby cause the elongated *object to sink,*



wherein said outer body has first and second ends, and

wherein when said elongated object is initially tossed into said *body of water, said elongated object maintains a substantially* horizontal orientation until said ingress of water occurs, a weight of the first end of the elongated object being insufficient by itself to cause a change from said substantially *horizontal orientation to a vertical orientation, and*

a weight confined to the first end of said outer body,

wherein the first end of the outer body is adapted to sink before the second end upon said ingress of water into said interior *chamber to thereby cause said outer body to change from a* horizontal orientation in which the outer body floats upon said surface to a vertical orientation as the outer body sinks below said surface, and to maintain said vertical orientation as it *sinks to the predetermined level,*

wherein said outer body includes at least one opening at said second end of the outer body for permitting egress of air from said interior area to outside said outer body in response to the *ingress of water,*

wherein said second opening is spaced from the second end of the body so that a pocket of air is present in said second end to cause said stick to maintain the upright posture as the *elongated object is filled with water,*

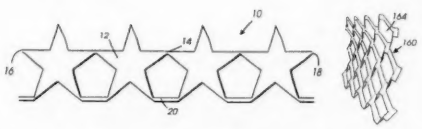
wherein said elongated object further comprises a removable end cap at said first end of the outer body, said end cap being arranged to be removed to permit access to said weight, and

wherein said weight is confined between the end cap and a flange extending inwardly from said outer body.

US 6,332,823 B1
BALLOON DISPLAYS

Graham M Rouse, Jr., 2442 Wheat St., Columbia, S.C. 29205

Continuation of application No. PCT/US96/17560, filed on Oct. 30, 1996, Provisional application No. 60/008,096, filed on Oct. 30, 1995. This application Apr. 24, 1998, Appl. No. *66,119.*
Int. Cl. A63H *3/06*
U.S. Cl. 446—220 **10 Claims**



1. A balloon display system, comprising:

a series of interconnected inflatable balloonlets with each balloonlet, includes at least one apex, each of said balloonlets being interconnected at an apex;

a flexible sheet including elongated slits extending through said sheet, said slits arranged in a plurality of rows with the slits of a given row being offset relative to the slits of each adjacent row;

wherein said sheet may be expanded to form a support matrix.

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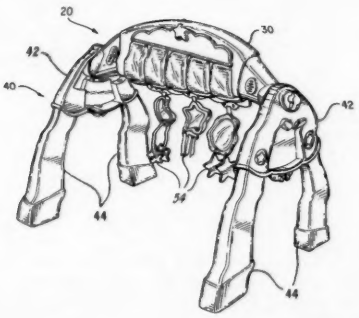
US 6,332,824 B2
CONVERTIBLE CHILD'S TOY
Robert A. Tell, 6534 Ward Rd.; David B. Fisher, 6791 E. Quaker St., both of Orchard Park, N.Y. 14127; Domenic T. Gubitosi, 201 Kelly Dr., East Aurora, N.Y. 14052, and Christopher D. Cimerman, 66 S. Bellevue Ave., Depew, N.Y. 14043
Filed Nov. 29, 1999, Appl. No. 449,477
Int. Cl. A63H *33/00*
U.S. Cl. 446—227 17 Claims



1. A convertible toy for use by a toddler and an infant, said convertible toy having a first and second configuration and being supportable on a support surface, comprising:

an activity unit including a housing defining a substantially planar surface, and a sensory output device, said sensory output device including

a first switch for selecting between an "on" and "off",

at least one second switch for producing audio output by the toddler,

a third switch for producing audio output by the infant, said *third switch being associated with a support for at least one* dangling toy, said third switch being disabled when said support is in a non-use position, and

a microprocessor associated with said first switch, said at least one second switch and said third switch, said microprocessor storing a plurality of audio output in digital form and being programmed to generate said audio output upon *activation of one of said at least one second switch and said* third switch;

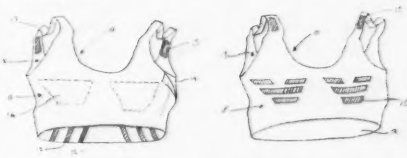
a base supporting said activity unit interchangeably between a first orientation and a second orientation; and

a housing formed on one of said activity unit and said base, said housing defining a first and second engagement with a mating piece formed on the other of said base and said activity unit, wherein when said mating piece is engaged with said first engagement, said activity unit is in said first orientation such that said substantially planar surface extends approximately parallel to the support surface, and wherein when said mating piece is engaged with said second engagement, said activity unit is in said second orientation, said second orientation being rotatably offset from said first orientation;

wherein when said convertible child's toy is in the first configuration, said activity unit is in said first orientation, said at least one second switch is enabled and said third switch is disabled;

wherein when said convertible child's toy is in the second configuration, said activity unit is in said second orientation and said third switch is enabled.

US 6,332,825 B1
BREAST SUPPORTING GARMENT UTILIZING SLIP RESISTANT MATERIALS TO CONTROL POSITION OF GARMENT
Victoria Elizabeth Henricksen, Duluth, Minn., assignor to Victoria E. Henricksen, Duluth, Minn.
Provisional application No. 60/151,304, filed on Aug. 30, 1999.
This application Aug. 26, 2000, Appl. No. 649,401.
Int. Cl. A41C 3/00
U.S. Cl. 450—81 1 Claim



1. A breast supporting garment including a torso portion, a breast supporting front portion and a back portion;

said garment being comprised of elastic fabric and having areas of non-slipping material on a surface of said fabric; said areas *being of sufficient size and location to counter the tendency of* said garment to slide out of place on the wearer's body;

(a) said areas of non-slipping material being comprised of *silicon or latex rubber;*

(b) said areas of non-slipping material having a thikness in the range of 0.001–0.5 mm in order to maintain the integrity o said non-slipping material;

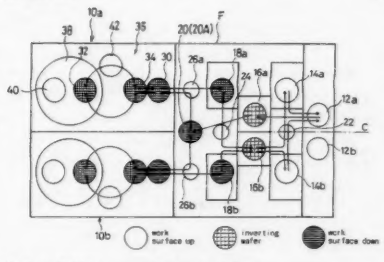
(c) said areas of non-slipping material being permanently affixed to said garment;

(d) said garment being of construction including elastic materials so as to be under sufficient tension on said wearer's *body to maintain contact between said areas of non-*slipping material with said wearer's skin;

(e) said areas of non-slipping material being on an inner surface of said garment and being the surfaace of said *garment in contact with said wearer's skin;*

(f) said areas of non-slipping material being located on said garment inner surface in at least any one of the following garment locations or any combination thereof including on straps, cup areas or the torso encircling portion.

US 6,332,826 B1
POLISHING APPARATUS
Seiji Katsuoka; Manabu Tsujimura; Kunihiko Sakurai, and *Hiroyuki Osawa, all of Kanagawa, Japan, assignors to* Ebara Corporation, Tokyo, Japan
PCT No. PCT/JP98/05252, § 371 Date Sep. 8, 1999, § 102(e) Date Sep. 8, 1999, PCT Pub. No. WO99/26763, PCT Pub. Date Jun. 3, 1999
PCT Filed Nov. 20, 1998, Appl. No. 341,882
Claims priority, application Japan, Nov. 21, 1997, 9-338035; Dec. 2, 1997, 9-347129
Int. Cl. B24B *49/00*
U.S. Cl. 451—5 98 Claims



1. A polishing apparatus comprising:

a storage section for storing a workpiece to be polished;

MISSING PATENTS FROM DECEMBER 25, 2001 OFFICIAL GAZETTE ISSUE

at least two processing lines extending from said storage section;

a temporary storage section to be shared by said at least two processing lines such that the workpiece to be polished and a polished workpiece are each capable of being received within the temporary storage section; and

at least one robotic device for transferring workpieces along said at least two processing lines.

US 6,332,827 B1
APPARATUS FOR MACHINING GLASS LENSES

Lutz Gottschald, Meerbusch, and Jörg Luderich, Ratingen, both of Germany, assignors to Wernicke & Co. GmbH, Düsseldorf, Germany

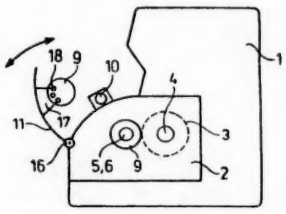
PCT No. PCT/EP99/00513, § 371 Date Aug. 7, 2000, § 102(e) Date Aug. 7, 2000, PCT Pub. No. WO99/39870, PCT Pub. Date Aug. 12, 1999

PCT Filed Jan. 27, 1999, Appl. No. 601,750

Claims priority, application Germany, Feb. 5, 1998, 198 04 489

Int. Cl. B24B *49/00;51/00*

U.S. Cl. 451—6 **6 Claims**



1. A spectacle lens machining apparatus, having

a housing,

a machining chamber in the housing,

a spectacle lens holding shaft and a machining device in the machining chamber,

a flap outwardly sealing the machining chamber when the flap is in a closed position,

a lens holder cooperating with the flap which, upon closure of the flap from an open position to the closed position, transports a rough-cast lens held on the lens holder into the region of the spectacle lens holding shaft,

a sensor which measures sensor data including the position of the rough-cast lens and its angular position on the holder, in the region between the flap in the open position and the spectacle lens holding shaft, and

a control device which is constructed as a computer and takes account of the position and angular position of the rough-cast lens in the spectacle lens holding shaft by computer using the sensor data when machining the spectacle lens by means of the machining apparatus.

US 6,332,828 B1
METHOD OF AND APPARATUS FOR MIRROR-LIKE POLISHING WAFER CHAMFER WITH ORIENTATION FLAT

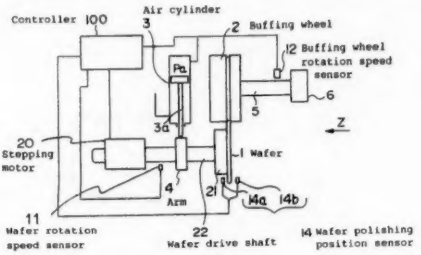
Fumihiko Hasegawa; Yasuyoshi Kuroka; Toshihiro Tsuchiya, all of Nishigou-mura; Koichiro Ichikawa, and Yasuo Inada, both of Nagano, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, and Fujikoshi Machinery Corp., Nagano, both of Japan

Division of application No. 08/623,771, filed on Mar. 29, 1996, now Pat. No. 6,113,463. This application Jul. 11, 2000, Appl. No. 613,870.

Claims priority, application Japan, Mar. 31, 1995, 7-100070

Int. Cl. B24B *9/06*

U.S. Cl. 451—6 **4 Claims**



1. A method of polishing a chamfer of a wafer having an orientation flat with a rotating buffing wheel pressed against the wafer chamfer by a predetermined pressure while rotating the wafer, wherein:

a wafer rotation speed is changed in correspondence to wafer polishing positions of an intrinsic peripheral part, corners and an orientation flat part of the wafer according to a detection signal from a detector for detecting the wafer polishing positions, and

the wafer rotation speed during a polishing of the intrinsic peripheral part is less than the wafer rotation speed during polishing of the corners and greater than the wafer rotation speed during polishing of the orientation flat part.

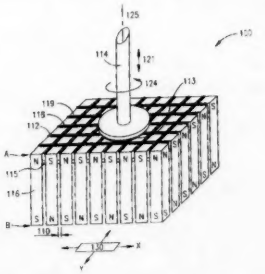
US 6,332,829 B1
POLISHING METHOD AND DEVICE

David Trommer, Kfar Vradim, Israel, assignor to MPM Ltd., Haifa, Israel

Filed May 4, 2000, Appl. No. 563,918

Int. Cl. B24B *1/00*

U.S. Cl. 451—28 **31 Claims**



1. A system for polishing a surface, said system comprising:

a polishing material; and

one or more magnetic means in contact with said polishing material, for reacting upon said polishing material to plasti cize such, whereby said plasticized material is used to polish said surface.

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US 6,332,830 B1
POLISHING METHOD AND POLISHING DEVICE

Kouichi Okamura; Fumio Suzuki, and Hisashi Masumura, all of Nishishirakawa, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

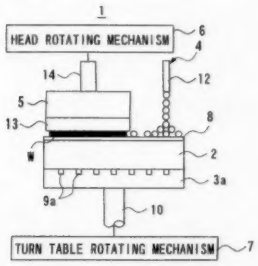
PCT No. PCT/JP99/04062, § 371 Date Mar. 24, 2000, § 102(e) Date Mar. 24, 2000, PCT Pub. No. WO00/07771, PCT Pub. Date Feb. 17, 2000

PCT Filed Jul. 29, 1999, Appl. No. 509,208

Claims priority, application Japan, Aug. 4, 1998, 10-220573

Int. Cl. B24B *1/00*

U.S. Cl. 451—36 **20 Claims**



1. A polishing method comprising the steps of:

supporting a turn table by a grooved surface of a turn table receiving member, the grooved surface being provided with a plurality of grooves in a straight direction;

pressing a work against a polishing pad adhered to the turn table while flowing polishing slurry; and

carrying out a polishing by rotating the work and the turn table.

US 6,332,831 B1
POLISHING COMPOSITION AND METHOD FOR PRODUCING A MEMORY HARD DISK

David M. Shemo, Aloha; W. S. Rader, Sherwood, and Toshiki Owaki, Tualatin, all of Oreg., assignors to Fujimi America Inc., Wilsonville, Oreg.

Filed Apr. 6, 2000, Appl. No. 544,287

Int. Cl. B24B *1/00*

U.S. Cl. 451—41 **16 Claims**

1. A polishing composition for a memory hard disk, which comprises at least the following components (a) to (d):

(a) from 0.1 to 50 wt %, based on the total amount of the polishing composition, of at least one abrasive selected from the group consisting of silicon dioxide, aluminum oxide, cerium oxide, zirconium oxide, titanium oxide, silicon nitride and manganese dioxide,

(b) from 0.001 to 10 wt %, based on the total amount of the polishing composition, of at least one periodate selected from the group consisting of periodic acid, potassium periodate, sodium periodate and lithium periodate,

(c) a buffer component to adjust the pH of the polishing composition to a range of from 2 to 5, and

(d) water.

US 6,332,832 B1
CMP POLISH PAD AND CMP PROCESSING APPARATUS USING THE SAME

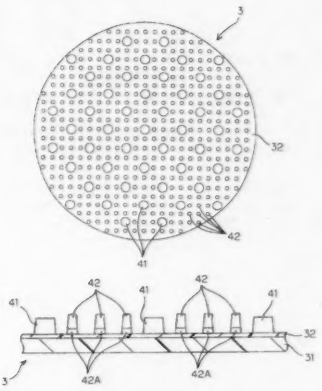
Keisuke Suzuki, Kyoto, Japan, assignor to Rohm Company, Ltd., Kyoto, Japan

Filed Apr. 11, 2000, Appl. No. 546,171

Claims priority, application Japan, Apr. 19, 1999, 11-111126

Int. Cl. B23F *21/03*

U.S. Cl. 451—41 **20 Claims**



1. A CMP polish pad used to chemically and mechanically polish a work to be polished, comprising polishing portions of two or more types, having different conditions of contact with the work, provided on a pad surface.

US 6,332,833 B1
METHOD FOR FABRICATING SILICON SEMICONDUCTOR DISCRETE WAFER

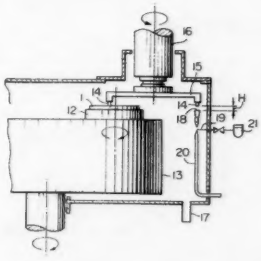
Hisashi Ohshima, and Tsutomu Satoh, both of Niigata-ken, Japan, assignors to Naoetsu Electronics Company, Niigata-ken, Japan

Division of application No. 08/898,550, filed on Jul. 22, 1997, now Pat. No. 6,066,562. This application Nov. 18, 1999, Appl. No. 442,462.

Claims priority, application Japan, Aug. 8, 1996, 8-209469

Int. Cl. B24B *53/00*

U.S. Cl. 451—56 **16 Claims**



1. A method of dressing a grinding wheel surface for fabricating silicon semiconductor discrete wafers, the grinding wheel performing a grinding process, the method comprising:

collecting grinding water including silicon semiconductor chips, during the grinding process of a silicon semiconductor wafer with a grinding wheel having a count of no less than #2000 and no greater than #6000;

mixing air into the grinding water; and

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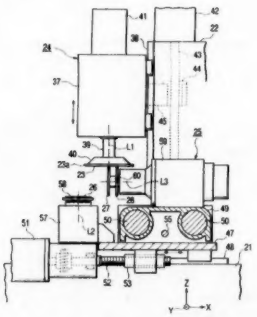
jetting the mixed water and air as a group of minute water drops to the grinding wheel surface during the grinding process to dress the grinding wheel surface.

US 6,332,834 B1
METHOD AND APPARATUS FOR GRINDING A WORKPIECE

Mitsuru Nukui, Toyama; Shirou Murai, Kanagawa; Michihiro Takata, Toyama; Tetsuo Okuyama, Kanagawa; Muneaki Kaga, Toyama, and Toyotaka Wada, Kanagawa, all of Japan, assignors to Nippei Toyama Corporation, Tokyo, Japan

Filed Mar. 31, 2000, Appl. No. 538,968
Claims priority, application Japan, Mar. 31, 1999, 11-091947; Aug. 3, 1999, 11-220019
Int. Cl. B24B *1/00*
U.S. Cl. 451—57 **23 Claims**



1. A method of grinding a workpiece, using a workpiece holding unit that includes a pad holding the workpiece, a rotating shaft attaching the pad at one end thereof, and a cylindrical member rotatably supporting the rotating shaft, comprising the steps of:

rotating the workpiece, formed of a circular thin plate about a center axis thereof, by rotating the rotating shaft and the pad holding the workpiece;

rotating a disk-shaped rotating grinding wheel about an axis thereof disposed substantially parallel to a plane of the workpiece; and

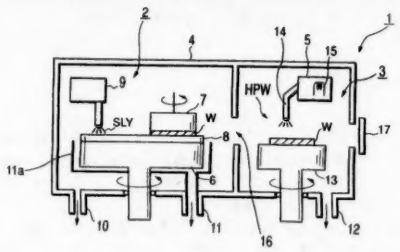
performing a relative feeding movement between the workpiece and said grinding wheel such said rotating grinding wheel moves along at least one part of an edge portion of the workpiece in a thickness direction of the workpiece, while concurrently rotating the workpiece and said rotating grinding wheel,

whereby an outer peripheral surface of said rotating grinding wheel grinds the edge portion of the workpiece.

US 6,332,835 B1
POLISHING APPARATUS WITH TRANSFER ARM FOR MOVING POLISHED OBJECT WITHOUT DRYING IT

Matsuomi Nishimura, Omiya; Mikichi Ban, Haga-machi; Kazuo Takahashi, Kawasaki, and Osamu Ikeda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1998, Appl. No. 193,858
Claims priority, application Japan, Nov. 20, 1997, 9-319844
Int. Cl. B24B *7/00*
U.S. Cl. 451—67 **9 Claims**



1. A polishing unit for polishing an object to produce a polished object by means of a polishing agent containing potassium, a cleaning unit for cleaning the polished object, and a transfer arm for moving the polished object from said polishing unit into said cleaning unit, and isolating means for isolating an internal atmosphere of said polishing unit, said cleaning unit and said transfer arm from an external atmosphere, wherein:

said polishing unit has means for supplying the polishing agent containing potassium;

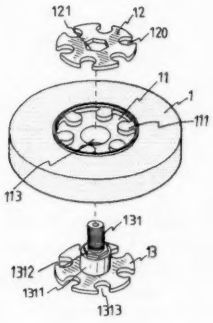
said cleaning unit has means for bringing hot pure water or steam of pure water heated to or above 80° C. into contact with the polished object; and

said transfer arm is operable to move the polished object without drying the polished object.

US 6,332,836 B1
GRINDING WHEEL ASSEMBLY

Ming-Xin Tseng, No. 38-11, 10th Neighborhood, Jungieng Li, Yuanli Jen, Miaoli, Taiwan

Filed Apr. 2, 2001, Appl. No. 822,239
Int. Cl. B23F *21/03;21/23*
U.S. Cl. 451—359 **1 Claim**



1. A grinding wheel assembly comprising:

a grinding wheel having a hole defined therein and two recesses respectively defined in tow surfaces of said grinding wheel, a plurality of protrusions extending inward from a inner periphery of each of said two recesses;

a first position member received in one of said two recesses and having a plurality of first notches which receive said protrusions therein, a tubular section extending from said first position member and a polygonal section located on said tubular section, a threaded rod extending from said polygonal section and extending through said hole and said tubular section engaged with said hole, and

a second position member engaged with the other recess and having a plurality of second notches defined therein so as to receive said protrusions in said recess, said second position member having a polygonal hole which is engaged with said polygonal section.

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US 6,332,837 B1

DEVICE FOR THE REMOVAL OF GAS AND PARTICLES FORMED DURING WELDING AND CUTTING JOBS

Vidar Wilk, N-5437, Finnås, and Reidar V., Stølane 21, N-5430 Bremnes, both of Norway

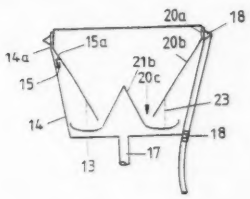
PCT No. PCT/NO98/00116, § 371 Date Nov. 23, 1999, § 102(e) Date Nov. 23, 1999, PCT Pub. No. WO98/46375, PCT Pub. Date Oct. 22, 1998

PCT Filed Apr. 7, 1998, Appl. No. 403,054

Claims priority, application Norway, Apr. 14, 1997, 971697

Int. Cl. B08B *15/04*

U.S. Cl. 454—63 **5 Claims**



1. An apparatus for removing gases and particles comprising

a housing having a plurality of circumferentially disposed walls defining an open end for facing a workpiece;

an energy reducing means in said housing for reducing the speed and energy of spark particles, said means including a first pyramid-shaped element disposed in said housing in spaced relation to said walls with a first open end facing said open end of said housing to receive a flow of material from the workpiece and a second open opposite end, and a second pyramid shaped element disposed in said housing with a closed apex end concentrically within said second open end of said first pyramid-shaped element to define a gap therebetween and to deflect the flow of material into said gap, said second pyramid shaped element being spaced from said walls of said housing; and

a suction unit connected to said housing for withdrawing a flow of material from between said first pyramid shaped element and said housing walls.

US 6,332,838 B1

THREE-DIMENSIONAL DISPLAY GAME DEVICE AND RECORDING MEDIUM FOR THREE-DIMENSIONAL DISPLAY GAME

Hitoshi Yamagami, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Jan. 24, 2000, Appl. No. 489,671

Claims priority, application Japan, Jul. 30, 1999, 11-216297

Int. Cl. A63F *9/12;13/00*

U.S. Cl. 463—9 **29 Claims**

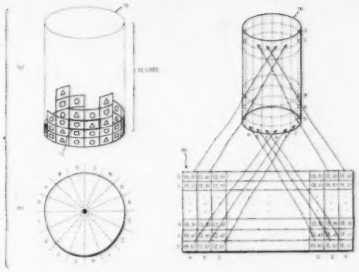
1. A three-dimensional (3D) display game device in which a game proceeds as a player takes actions for game elements varied in pattern displayed on a game field spreading across a display screen, the 3D display game device comprising:

a controller which is actuated by the player; and

image processing means for effecting program processing for a 3D display game in response to actuation of said controller, and then generating image data for the 3D display game for display on said display, wherein

said image processing means comprises:

3D game field display control means for generating, for display on said display, a 3D game field which is laterally extended around a tubular subject and provided with a plurality of display regions arranged along a line direction of the subject which corresponds to a circumferential direction, and along a column direction thereof intersecting the line direction;



a two-dimensional field table structured by spreading said 3D game field across a two-dimensional (2D) plane, and which is provided with a plurality of entries each corresponding to one of the display regions of the 3D game field, wherein, to the entries, pattern data of the game elements to be displayed on the corresponding display regions is written;

read means for reading the pattern data of said game elements after designating a read address of said 2D field table;

texture data generation means for generating texture data for displaying a shape unique to every pattern of said game elements; and

placement processing means for placing said texture data corresponding to the pattern data of the game elements read from said 2D field table on the corresponding display regions of said 3D game field for display,

wherein said texture data generation means comprises:

basic texture data generation means for generating basic texture data indicating a basic shape for every pattern of said game elements; and

texture data deformation means for producing, when the pattern data of the game elements is each read from an entry of said 2D field table, texture data indicating the shape for the column where the display region of said 3D game field corresponding to the entry is located by subjecting the basic texture data corresponding to the pattern data to a deformation operation.

US 6,332,839 B2

ELECTRONIC POKER DEVICE AND METHOD FOR OPERATING SAME

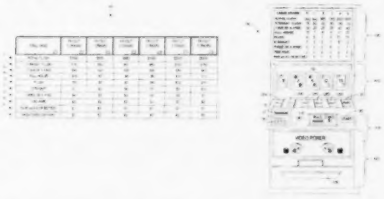
Jay S. Walker, Ridgefield; James A. Jorasch, Stamford, and Magdalena Mik, Wallingford, all of Conn., assignors to Walker Digital, LLC, Stamford, Conn.

Continuation of application No. 09/047,577, filed on Mar. 24, 1998, now Pat. No. 6,248,016. This application Apr. 20, 2001, Appl. No. 839,854.

This patent is subject to a terminal disclaimer.

Int. Cl. A63F *9/24*

U.S. Cl. 463—13 **15 Claims**



1. An apparatus, comprising:

a storage device; and

a processor in communication with the storage device, the storage device storing a program for controlling the processor; and

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the processor operative with the program to:

display a hand of cards on a display screen of a video poker machine;

receive a signal via an input device of the video poker machine that indicates cards of the hand that a player wants to discard;

determine a quantity of draw cards to provide based on the number of cards the player wants to discard;

provide the quantity of draw cards via the display screen; and

determine a payout based at least upon the quantity of draw cards provided.

US 6,332,840 B1
OPERATION CONTROLLING DEVICE AND VIDEO PROCESSING SYSTEM USED THEREWITH

Satoshi Nishiumi, and Kazuo Koshima, both of Kyoto, Japan, assignors to Ninetendo Co., Ltd., Kyoto, Japan

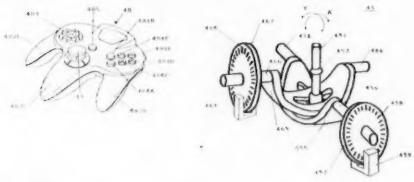
Continuation of application No. 08/719,019, filed on Sep. 24, 1996, now Pat. No. 6,001,015. This application Jan. 6, 1999, Appl. No. 225,466.

Claims priority, application Japan, Oct. 9, 1995, 7-288006

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *3/033;* **A63B** *13/06*

U.S. Cl. 463—38 **30 Claims**



1. An operation controlling device which is connected, in use, to a video processing device console which generates video data to be displayed on a display unit in accordance with a stored program and which responds to an operator's manipulations to provide changes to displayed video data, said operation controlling device comprising:

an operation controlling device housing;

an operation member protruding from said housing which, in use, is tilted by an operator within a desired range and is supported such that it stops at a desired position when not being manipulated by the operator,

rotor bodies within said housing which rotate according to the amount of tilt of said operation member,

rotation detectors within said housing which detect the rotated condition of said rotor bodies,

counting circuitry within said housing for maintaining count values related to rotation amounts of the rotor bodies which are detected by said rotation detectors,

reset signal generation circuitry within said housing for generating reset signals in response to a predetermined condition to reset the count values of said counting circuitry, and

data transfer circuitry within said housing for transferring the count values which have been counted by said counting circuitry to said video processing device.

US 6,332,841 B1
FLOATING CUSHION SUB

Douglas C. Secord, Calgary, Canada, assignor to Foremost Industries, Inc., Calgary, Canada

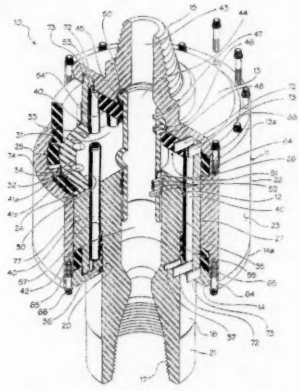
PCT No. PCT/CA98/00850, § 371 Date Feb. 29, 2000, § 102(e) Date Feb. 29, 2000, PCT Pub. No. WO99/15757, PCT Pub. Date Apr. 1, 1999

PCT Filed Sep. 9, 1998, Appl. No. 486,551

Claims priority, application Canada, Sep. 25, 1997, 2216498

Int. Cl. E21B *17/02*

U.S. Cl. 464—20 **8 Claims**



1. A cushion sub for connection in a drill string to absorb torsional and axial vibrations in the drill string, said cushion sub comprising:

a main body,

a first cylinder member defining a cylinder chamber therewithin,

a piston member disposed within said cylinder chamber for axial movement within said cylinder chamber between extreme inward and outward positions,

said cylinder member having internal spline means cooperating with external spline means of said piston member for preventing relative rotation between said piston member and said first cylinder member while permitting said axial movement of said piston member between said inward and outward positions relative to said first cylinder member,

cushion means at opposite ends of said cylinder chamber for engagement by said piston member in either of said extreme positions for absorbing axial vibrations and preventing transmission of said axial vibrations between the piston member and said first cylinder member,

characterized by:

said main body including an outer casing member, and a first end cap having a first connection means at one end of said main body for rigid connection to one of a driving portion and a driven portion of a drill string,

said first cylinder member being disposed within said outer casing member,

a piston shaft extending from said piston member through an end of said casing member opposite to said one end,

said piston shaft having second connection means at a free end thereof for rigid connection to the other of a driving portion and a driven portion of a drill string,

said first cylinder member having an outer surface radially disposed inwardly from an inner surface of said casing member to thereby form an annular space therebetween,

first axially extending, circumferentially spaced vane members, integrally formed with the inner surface of said casing member, and projecting radially inward into said annular space,

second radially outward projecting, circumferentially spaced, vane members integrally formed on said outer surface of said first cylinder member and extending axially therealong within said annular space,

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said first vane members being disposed between and circumferentially spaced from said second vane members within said annular space,

resilient cushion means disposed in said annular space between and separating said first and second vane members for absorbing torsional vibrations and thereby preventing transmission of said torsional vibrations between said cylinder member and said casing member.

US 6,332,842 B1
ROTATION TRANSMITTER HAVING TORQUE LIMITING MECHANISM

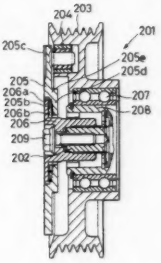
Yasuo Tabuchi, Toyoake; Toshihiro Hayashi, Chiryu; Yuuichi Aoki, Chita-gun; Manabu Saiki, Anjo; Junichi Ohguchi, Toyoake, and Takuo Sakai, Kariya, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Jun. 19, 2000, Appl. No. 597,831

Claims priority, application Japan, Jun. 21, 1999, 11-174437; Jul. 28, 1999, 11-213407; Sep. 28, 1999, 11-273614; Dec. 17, 1999, 11-358430

Int. Cl. F16D *9/00*

U.S. Cl. 464—33 **9 Claims**



1. A rotation transmitter, comprising:

a pulley including a cylindrical wall; and

a hub rotating by receiving rotation force from said pulley, said hub including a torque limiting mechanism to interrupt rotation transmission from said pulley to said hub when a torque difference between said pulley and said hub exceeds a threshold, wherein

said torque limiting mechanism is disposed within an axial dimension of said cylindrical wall;

said torque limiting mechanism includes a break portion to be broken to interrupt the rotation transmission from said pulley to said hub when the torque difference between said pulley and said hub exceeds said threshold;

said break portion is provided at a particular position where stress caused by torque transmission to said hub mainly acts;

said rotation transmitter is used for a rotary machine;

said rotation transmitter further includes a connection portion connecting to a rotating shaft of said rotary machine; and

said connection portion is provided radially inwardly from said particular position.

US 6,332,843 B1
DAMPER DISK ASSEMBLY

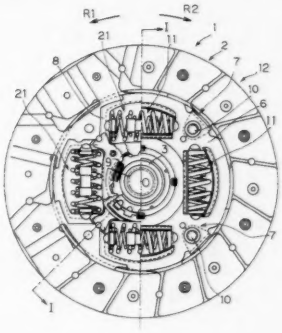
Yasuyuki Hashimoto, Neyagawa, Japan, assignor to Exedy Corporation, Osaka, Japan

Filed Jan. 7, 2000, Appl. No. 479,222

Claims priority, application Japan, Jan. 19, 1999, 11-10130

Int. Cl. F16D *3/12*

U.S. Cl. 464—68 **36 Claims**



1. A damper disk assembly comprising:

a first rotary member having at least one spring accommodating aperture;

a second rotary member having at least one spring accommodating portion corresponding to said spring accommodating aperture, said second rotary member being arranged near said first rotary member;

a coil spring being arranged within said spring accommodating aperture and said spring accommodating portion for transmitting a torque between said first and second rotary members;

a pair of spring seats being arranged on circumferentially opposite ends of said coil spring, said spring seats supporting the circumferentially opposite ends of said coil spring and engaging with an inner side of said coil spring, said spring seats being circumferentially engageable with circumferentially opposite ends of said spring accommodating aperture and said spring accommodating portion; and

an elastic member being arranged within said coil spring for being compressed a predetermined amount between said spring seats when said spring seats move toward each other in accordance with relative rotation between said first and second rotary members, said elastic member being configured to stop relative rotation between said first and second rotary members to prevent complete compression of said coil spring,

said spring seats being supported by the circumferentially opposite ends of said spring accommodating aperture and said spring accommodating portion such that said spring seats are rotatable about an axis parallel to a rotation axis of said first and second rotary members, said spring seats having circumferentially facing spring support surfaces supporting opposite axial end surfaces of said coil spring, each of said spring support surfaces extending in an axial direction substantially parallel to said rotation axis of said first and second rotary members to support each of said opposite axial end surfaces, each of said spring support surfaces having a radial width extending in a direction generally along a radius extending outwardly from said rotation axis of said first and second rotary members, said radial widths of said circumferentially facing spring support surfaces being substantially equal to or less than an inner diameter of said coil spring, such that each of said circumferentially facing spring support surfaces contact less than 360° of each of said opposite axial end surface of said coil spring.

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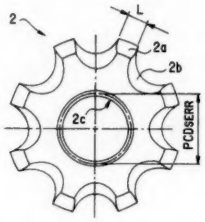
US 6,332,844 B1
PROPELLER SHAFT AND CONSTANT VELOCITY UNIVERSAL JOINT FOR A PROPELLER SHAFT
Yoshihiko Hayama, and Haruo Nagatani, both of Shizuoka-ken, Japan, assignors to NTN Corporation, Osaka-fu, Japan
Filed Dec. 29, 1999, Appl. No. 474,101
Claims priority, application Japan, Feb. 23, 1999, 11-045169
Int. Cl. F16D *3/224*
U.S. Cl. 464—145 **6 Claims**



1. A constant velocity universal joint for a propeller shaft having a shaft portion, comprising: an outer joint member in which eight guide grooves extending in an axial direction are formed on an inner spherical surface thereof; an inner joint member in which eight guide grooves extending in the axial direction are formed on an outer spherical surface thereof and an engagement portion having teeth which come into tooth-engagement with the shaft portion of the propeller shaft is formed on an inner surface thereof; eight torque transmitting balls disposed in eight ball tracks, respectively, each ball track formed by cooperation between one of the guide grooves in the outer joint member and a corresponding one of the guide grooves in the inner joint member; and a cage for holding each one of the torque transmitting balls,

wherein the ball tracks widened toward one side in the axial direction forming wedge shape configurations, and

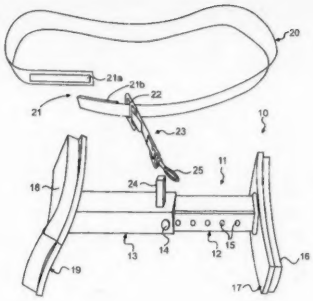
a ratio Rw (=W/PCD_{SERR}) between an axial width (W) in the axial direction of the inner joint member and a pitch circle diameter (PCD_{SERR}) of the teeth of the engagement portion is $0.57<Rw\leqq0.95$ and a circumferential width (L) in the circumferential direction of the outer surface between the guide grooves of the inner joint member is $L\leqq3.5$ mm.

US 6,332,845 B1
GOLF SWING TRAINING AID
Richard Andrew Priestley, 28 Sabot Street, Jamboree Heights, Queensland, Australia, 4074
PCT No. PCT/AU98/00308, § 371 Date Nov. 29, 1999, § 102(e) Date Nov. 29, 1999, PCT Pub. No. WO98/53888, PCT Pub. Date Dec. 3, 1998
PCT Filed Apr. 30, 1998, Appl. No. 424,745
Claims priority, application Australia, May 30, 1997, PO7084
Int. Cl. A63B *69/36*
U.S. Cl. 473—207 **10 Claims**

1. A swing training method for golf or other sports, including:

providing an elongate body with respective first and second end portions and a releasable securement means;

arranging said first and second end portions being engaged with a player's legs at, or adjacent, the player's knees and arranging said releasable securement means at or adjacent one of the end portions to releasably secure the body to the adjacent one



of the player's legs so that on a back swing and during at least a portion of a forward swing, the player's knees are maintained in a substantially fixed or stable relationship whereby the other end of the body is released from the player's legs to allow the player's knees to move before the completion of the forward swing.

US 6,332,846 B1
DEVICE FOR POSITIONING THE HEAD OF A GOLFER DURING THE GOLF SWING
David B. Rennhack, 5840 Sycamore Bend, The Colony, Tex. 75056
Filed Sep. 17, 1999, Appl. No. 398,510
Int. Cl. A63B *57/00*
U.S. Cl. 473—208 **5 Claims**

1. A method of training a golf swing comprising:

forming a mouthpiece having a straight shaft of constant diameter extending outwardly therefrom;

placing said mouthpiece into a mouth of a golfer such that said shaft extends outwardly of the mouth of the golfer; and

moving a head of the golfer until an end of said shaft opposite said mouthpiece is in a line-of-sight between an eve of the golfer and the golf ball.

MISSING PATENTS FROM DECEMBER 25, 2001 OFFICIAL GAZETTE ISSUE

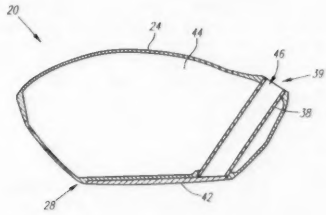
US 6,332,847 B2
INTEGRAL SOLE PLATE AND HOSEL FOR A GOLF CLUB HEAD

James M. Murphy; Herbert Reyes, both of Oceanside; D. Clayton Evans, San Marcos; J. Andrew Galloway, Escondido, and Daniel R. Jacobson, San Diego, all of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.

Division of application No. 09/474,927, filed on Dec. 29, 1999, now Pat. No. 6,244,976, which is a continuation-in-part of application No. 08/958,723, filed on Oct. 23, 1997, now Pat. No. 6,010,411. This application Dec. 29, 2000, Appl. No. 753,271.

Int. Cl. A63B *53/04*

U.S. Cl. 473—324 **7 Claims**



1. A golf club head comprising:

a body composed of a composite material of fibrous plies of pre-preg, the body having a hollow interior, a face, a sole, and a crown, the crown having a crown aperture therein, the sole having a recess and a sole aperture; and

a sole plate having an integral hosel tube projecting therefrom, the sole plate disposed within the recess of the sole and the hosel tube extending through the sole aperture and disposed in relation to the crown aperture, the sole plate and integral hosel tube composed of an injection molded polymer material that has a density greater than the composite material.

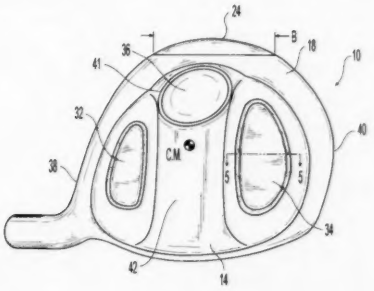
US 6,332,848 B1
METAL WOOD GOLF CLUB HEAD

D. Clayton Long, Carlsbad, and Thomas L. Crow, La Jolla, both of Calif., assignors to Cobra Golf Incorporated, Carlsbad, Calif.

Provisional application No. 60/117,538, filed on Jan. 28, 1999. This application Jan. 28, 2000, Appl. No. 493,927.

Int. Cl. A63B *53/04*

U.S. Cl. 473—328 **17 Claims**



17. A metal wood club head, comprising:

a crown with a depending skirt and strike face, and a sole plate secured to the skirt and strike faces, said club head having a heel and a toe and a back portion on said skirt opposite the strike face, the club having a volume of less than about 250 cc and a moment of inertia of at least about 3200 $g \cdot cm^2$;

said crown defining two opposed dimples located rearwardly from the strike face separated by an hour-glass shaped spine;

a first cavity defined by the sole plate located rearwards and towards the heel of said club head;

a second cavity defined by the sole plate located rearwards towards the toe of said club head and approximately opposite of said first cavity to define a ridge therebetween extending back from the strike face, wherein said first and second cavities include a bottom wall and a distinct side wall to form a beam-like web in the sole plate the such that sole plate stiffness is increased thereby;

a dish-shaped depression located rearward said first and second cavities and approximately in the center of said sole plate; and

a backweight attached to the skirt back portion, behind and substantially in line with said ridge defined by the first and second cavities, said backweight comprising about 7 to 15 percent of the club head mass and being included within an angle of not greater than about 110 degrees measured at the center of mass centered around a line perpendicular to the strike face.

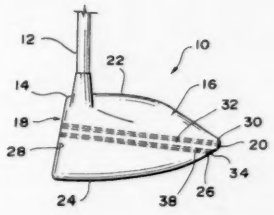
US 6,332,849 B1
GOLF CLUB DRIVER WITH GEL SUPPORT OF FACE WALL

David E. Beasley, Littleton, Colo., assignor to Pyramid Products, Inc, Littleton, Colo., and Airways Associates, Matawan, N.J.

Filed Jan. 14, 1999, Appl. No. 231,446

Int. Cl. A63B *53/04*

U.S. Cl. 473—332 **12 Claims**



1. A golf club head comprising:

a body including a front face with a rear wall, a rear face, a top and a bottom;

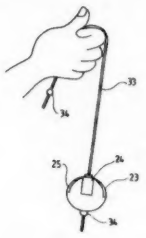
a viscoelastic member confined within a substantially cylindrical support tube positioned within the body and in direct contact with the front face of the body, the viscoelastic member countering force applied to the front face of the body by applying pressure to the front face of the body when a golf ball is struck and transmitting only P-waves in a direct line from the front face and substantially parallel to walls of the substantially cylindrical support tube, and where the force generated by the contact of the golf ball on the front face results in inertial energy and pressure created within the confined viscoelastic member, thereby generating an outwardly directed force against the rear wall of the front face, resulting in a greater energy transmission to the golf ball.

MISSING PATENTS FROM DECEMBER 25, 2001 OFFICIAL GAZETTE ISSUE

US 6,332,850 B1
GOLF BALL CORES WITH IMPROVED DURABILITY
Jeffrey L. Dalton, Dartmouth, Mass., assignor to Acushnet Company, Fairhaven, Mass.
Division of application No. 09/259,878, filed on Mar. 1, 1999, now Pat. No. 6,120,390. This application Sep. 13, 2000, Appl. No. 660,595.
Int. Cl. A63B *37/04;37/06*
U.S. Cl. 473—371 **15 Claims**

1. A golf ball comprising a cover, wherein the cover has a thickness of from about 0.02 inch to about 0.08 inch and a Shore D hardness of from about 45 to about 70, and a core, wherein the core has a diameter of from about 1.25 inches to about 1.65 inches and an Atti compression of from about 60 to about 90, wherein the core comprises a blend of at least one thermoset rubber material and at least one non-ionic, modified polyolefin compatible with the at least one thermoset rubber material, wherein the non-ionic, modified polyolefin has a melting point below about 170° C. and an Izod Impact Resistance of at least about 1 ft. lb./in.

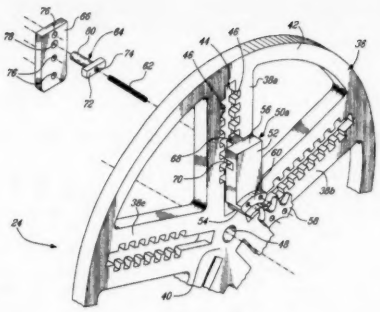
US 6,332,851 B1
TOY CONKER
Simon Richard Griffin, 320 Queens Esplanade, Birkdale Queensland 4159, Australia
PCT No. PCT/AU98/00643, § 371 Date Mar. 8, 2000, § 102(e) Date Mar. 8, 2000, PCT Pub. No. WO99/12613, PCT Pub. Date Mar. 18, 1999
PCT Filed Apr. 23, 1999, Appl. No. 486,714
Claims priority, application United Kingdom, Sep. 9, 1997, 9719079; Australia, Jan. 7, 1998, PP1243
Int. Cl. A63B *67/10;* **A63H** *33/18*
U.S. Cl. 473—577 **7 Claims**



1. A toy conker which has a main body portion attachable to a line member, the body portion having at least one insert which can be struck entirely off the main body portion, the insert can be refitted to the main body portion after being struck off, the main body portion has at least one recess in which the at least one insert can locate, the recess having a vertically extending clip and the insert having a rearwardly extending rib which press fits into the clip.

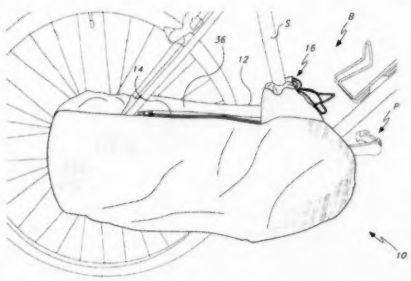
US 6,332,852 B1
VARIABLE RATIO DRIVE SYSTEM
John Allard, Saint-Jean-des-Piles, Canada, assignor to 3561020 Canada Inc., Quebec, Canada
Filed May 30, 2000, Appl. No. 580,484
Int. Cl. F16H *9/10*
U.S. Cl. 474—53 **14 Claims**

1. A variable ratio drive system comprising:
a variable diameter sprocket including:



a support having a rotation axis and at least three radial apertures; each aperture being provided with at least two stopping element;
at least three sprocket portions, each being so mounted to a respective one of said at least three radial aperture of said support as to be radially movable therein; each of said at least three sprocket portions includes a movable element configured and sized to interconnect with said at least two stopping element to selectively maintain the sprocket portion in a desired radial position; each sprocket portion also includes a biasing element mounted thereto to bias said movable element towards said at least two stopping element;
a sprocket diameter changing mechanism including:
a fixed portion; and
a movable portion mounted to said fixed portion; said movable portion including a pushing surface so positioned and configured as to overcome a biasing action of said biasing element through a pushing action on said movable element of said sprocket portion; said pushing action causing the disengagement of said movable element from one of said stopping element; said movable portion also including at least one guiding surface configured and sized to reposition said sprocket portion in a second desired position and to engage said movable element with a corresponding stopping element.

US 6,332,853 B1
REMOVABLE COVER FOR BICYCLE CHAIN AND DERAILLEURS
Melinda K. Bowman, 10475 Upland Trail, Missoula, Mont. 59804
Provisional application No. 60/125,548, filed on Mar. 22, 1999. This application Mar. 16, 2000, Appl. No. 526,877.
Int. Cl. B62J *13/04;* **B65D** *65/08*
U.S. Cl. 474—146 **10 Claims**



1. A removable, flexible cover for a drive train of a bicycle, the drive train including front and rear sprockets, derailleurs, drive chain and one foot pedal, said cover comprising:

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an elongated flexible pouch dimensioned and configured for completely encasing the drive train of a bicycle, the pouch having a central top opening formed in said pouch and sized to fit over the drive train of the bicycle;

a single flap foldable over a portion of the drive train, said flap being integral with said pouch; and

closure means along said pouch for releasably closing said flap over the central top opening defined in said pouch;

said pouch including:

a first tongue extending forwardly adjacent a top rear end of said opening and having a free end releasably attached to said flap, said first tongue and said flap defining a rear opening sized and dimensioned for a rear axle of a bicycle to pass through when the free end of said first tongue is attached to said pouch and said flap is closed over the central top opening; and

a second tongue extending forwardly from said flap and having a free end releasably attached to said pouch, said second tongue and said flap defining a front opening dimensioned and configured for passing a pedal crank of a bicycle through the front opening when the free end of said second tongue is attached to said pouch and said flap is closed over said central top opening.

US 6,332,854 B1

BELT FOR CONTINUOUSLY VARIABLE TRANSMISSION

Ken Kanokogi, and Takamichi Shimada, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

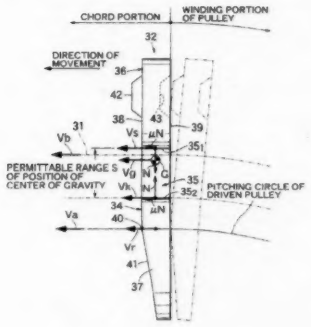
PCT No. PCT/JP99/01110, § 371 Date Jun. 22, 2000, § 102(e) Date Jun. 22, 2000, PCT Pub. No. WO99/53219, PCT Pub. Date Oct. 21, 1999

PCT Filed Mar. 8, 1999, Appl. No. 581,219

Claims priority, application Japan, Apr. 10, 1998, 10-098664; Feb. 12, 1999, 11-034801

Int. Cl. F16G *5/16*

U.S. Cl. 474—242 **2 Claims**


CHORD PORTION
WINDING PORTION OF PULLEY
DIRECTION OF MOVEMENT
PERMITTABLE RANGE S OF POSITION OF CENTER OF GRAVITY
PITCHING CIRCLE OF DRIVEN PULLEY

1. A belt for a continuously variable transmission, comprising a large number of metal elements (**32**) supported on metal ring assemblies (**31**) each of which is comprised of a plurality of endless metal rings (**33**) laminated one on another, said belt being wound around a drive pulley (**6**) and a driven pulley (**11**) to transmit a driving force between both of said pulleys (**6** and **11**),

characterized in that said metal elements (**32**) include ring slots (**35**) for supporting said metal ring assemblies (**31**), and are pitchably in abutment against one another with a rocking edge (**40**) interposed therebetween, and

the following relation is established:

$$Vr<Vg<Vs$$

wherein, at an instant when said metal element (**32**) leaves said driven pulley (**11**), Vr represents a speed of the said rocking edge (**40**); Vg represents a speed of the center of gravity (G) of said metal element (**32**); and Vs represents a speed of a radially outer end ($\mathbf{35}_1$) of said ring slot (**35**).

US 6,332,855 B1

CONTROLLER FOR AN AUTOMATIC TRANSMISSION

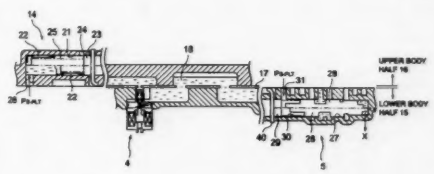
Takashi Murasugi, Fuji, Japan, assignor to Jatco Transtechnology Ltd., Fuji, Japan

Filed Apr. 28, 2000, Appl. No. 560,343

Claims priority, application Japan, Apr. 30, 1999, 11-124978

Int. Cl. F16H *31/00;* **E03B** *00/00;* **F16D** *19/00*

U.S. Cl. 475—116 **4 Claims**



1. A controller for an automatic transmission comprising:

frictionally engagable elements to be engaged/disengaged depending on a pressure of a hydraulic oil applied to said frictionally engagable elements;

a pressure adjusting valve for adjusting the pressure of the hydraulic oil to be applied to said frictionally engagable elements;

an electromagnetic valve for providing an output pressure to control said pressure adjusting valve;

a control valve which accommodates said pressure adjusting valve and said electromagnetic valve, said control valve body having at least an upper valve body half and a lower valve body half;

a hydraulic oil path extending between the pressure adjusting valve and the electromagnetic valve and formed between the upper and lower valve body halves in a zigzagging manner;

an accumulator fluid communicating with said oil path disposed on one of said the upper and lower valve body halves, an oil chamber of said accumulator which applies the oil pressure to a piston of said accumulator fluid communicating with a top of the oil path formed in said one of the valve body halves; and

an air discharge path which functions as a discharge path of hydraulic oil provided on an opposite side of said accumulator from the oil chamber such that when the oil pressure is applied to the oil path, possible air staying up within the oil path is discharged through said air discharge path to the outside.

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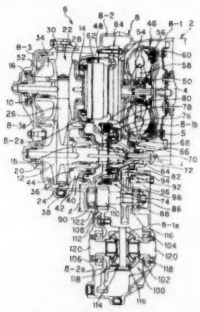
US 6,332,856 B1
CONTINUOUSLY VARIABLE TRANSMISSION
Michitaka Iwamoto, Shizuoka-ken, Japan, assignor to Suzuki Motor Corporation, Shizuoka-ken, Japan
Filed Jan. 7, 2000, Appl. No. 479,836
Claims priority, application Japan, Jan. 29, 1999, 11-022840
Int. Cl. F16H *37/02;9/12;9/18*
U.S. Cl. 475—210 **12 Claims**



1. A continuously variable transmission wherein a driving shaft coaxial with a crank shaft of an engine is rotatably supported by a transmission case, a driven shaft disposed in parallel with said driving shaft is rotatably supported by said transmission case, a driving pulley is mounted on said driving shaft, said driving pulley comprising a first driving pulley piece fixed onto said driving shaft and a second driving pulley piece mounted on the driving shaft in an axially movable and non-rotatable manner relative to the driving shaft, a driven pulley is mounted on said driven shaft, said driven pulley comprising a first driven pulley piece fixed onto said driven shaft and a second driven pulley piece mounted on the driven shaft in an axially movable and non-rotatable manner relative to the driven shaft, and a belt is entrained on both said driving pulley and said driven pulley, wherein a torque converter and a forward/reverse change-over mechanism are disposed on an input side of said driving shaft with respect to said driving pulley, an output clutch is disposed on an output side of said driven shaft with respect to said driven pulley, one side of a counter shaft is supported by said transmission case through a ball bearing, and an opposite side of the counter shaft confronts said second driven pulley piece and is supported by the transmission case through a roller bearing.

US 6,332,857 B1
LOADING CAM DEVICE FOR, AN APPARATUS FOR MEASURING THRUST OF A LOADING CAM DEVICE FOR, AND A METHOD OF ASSEMBLING A TOROIDAL-TYPE CONTINUOUSLY VARIABLE TRANSMISSION
Kouji Ishikawa, Kanagawa; Kiyotaka Hirata, and Mitsuo Kumagae, both of Saitama, all of Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Mar. 29, 2000, Appl. No. 537,683
Claims priority, application Japan, Mar. 31, 1999, 11-090927
Int. Cl. F16H *15/38;* **B23P** *21/00;* **G01L** *5/00*
U.S. Cl. 476—41 **11 Claims**

1. A loading cam device for a toroidal-type continuously variable transmission comprising:

an input shaft including a flange portion at its one end portion;

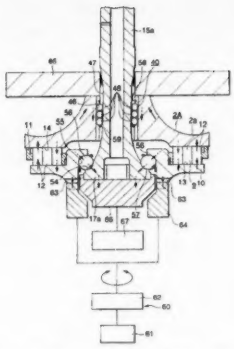
a circular-ring-shaped cam plate supported on the inner surface of the flange portion of said input shaft, the circular-ring-shaped cam plate including, at its inner surface, a drive side cam surface which comprises an uneven surface extending in the circumferential direction of said cam plate;

an input side disk including an outer surface and an inner surface, and the input side disk being supported by the input shaft in such a manner that it is allowed not only to shift in the axial direction of the input shaft with respect to the input shaft but also to rotate in synchronization with the input shaft, the outer surface being disposed opposed to the drive side cam surface of the cam plate and formed as a driven side cam surface comprising an uneven surface extending in the circumferential direction of the input side disk, and the inner surface being disposed on the opposite side to the outer surface in the axial direction of the input side disk and formed as a concave-shaped surface having an arc-shaped section;

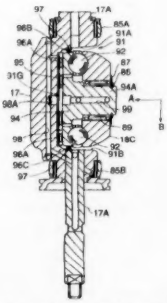
a plurality of rollers respectively held by and between the drive side cam surface and the driven side cam surface; and

a retainer for holding the plurality of rollers in a freely rotatable manner,

wherein, of the loading cam device, not only the input shaft, the cam plate, the input side disk, the rollers and the retainer which are parts produced separately from one another, are previously assembled so as to have such positional relationship that should be provided after completion of assembly of a toroidal-type continuously variable transmission, before they are actually assembled to the toroidal-type continuously variable transmission, but also the thrust of the loading cam to be generated due to the mutual relative rotation between the cam plate and the input side disk is previously measured.



US 6,332,858 B1
TOROIDAL CONTINUOUSLY VARIABLE TRANSMISSION
Haruhito Mori, Kawasaki; Jun Sugihara, Yokosuka; Haruyoshi Kumura, Fujisawa; Toshikazu Oshidari, Yokosuka, and Jun Watanabe, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Apr. 25, 2000, Appl. No. 556,782
Claims priority, application Japan, Apr. 30, 1999, 11-123619; Dec. 17, 1999, 11-358438; Dec. 17, 1999, 11-358439
Int. Cl. F16H *15/38*
U.S. Cl. 476—46 **20 Claims**



1. A toroidal continuously variable transmission comprising:

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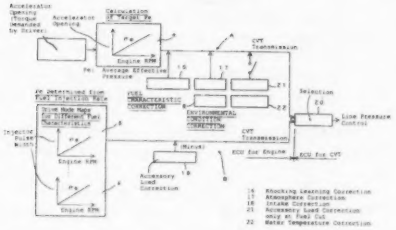
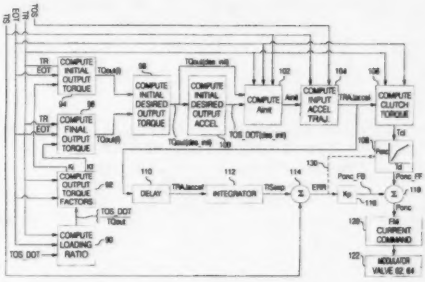
an input shaft;
an input disk supported on the input shaft;
an output disk supported relative to the input disk on the input shaft;
a power roller gripped by the input disk and the output disk;
a pedestal which supports the power roller such that the power roller is free to rotate;
a trunnion;
a first roller bearing which supports the pedestal on the trunnion relative to a horizontal load which forms a right angle to the input shaft, and permits the pedestal to undergo a displacement parallel to the input shaft; and
a second roller bearing which supports the pedestal on the trunnion relative to a vertical load which forms a right angle to the input shaft, and permits the pedestal to undergo a displacement parallel to the input shaft.

US 6,332,859 B1
CONTROL SYSTEM AND METHOD FOR CONTINUOUSLY VARIABLE TRANSMISSION
Hironobu Sato; Hiroki Tamura; Masato Tojo; Kenji Misaki; Atsushi Takeda; Kazuchika Tashima, all of Aichi; Kenichi Nakamori, Kobari-cho, and Hiroki Asayama, Aichi, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 17, 2000, Appl. No. 572,453
Claims priority, application Japan, May 17, 1999, 11-135779
Int. Cl. B60K *41/12;41/04*
U.S. Cl. 477—43 **10 Claims**



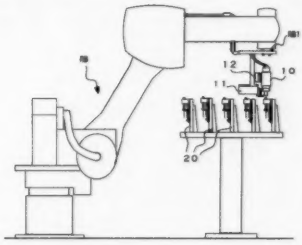
1. A control system for a continuously variable transmission, comprising:
a first element for determining a first parameter value indicating an engine output torque from the engine RPM and a value of an engine output demanded by a driver;
a second element for determining a second parameter value indicating an engine output torque from a parameter value corresponding to a rate of fuel injection into the engine;
a selection element for selecting one of said first parameter value and said second parameter value; and
a control element for controlling the continuously variable transmission on the basis of the selected parameter value.

US 6,332,860 B1
MODEL-BASED ON-COMING CLUTCH PRESSURE CONTROL FOR AN AUTOMATIC TRANSMISSION UPSHIFT
Gregory A Hubbard, Carmel, and Jeffrey Kurt Runde, Fishers, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 20, 2000, Appl. No. 528,609
Int. Cl. B60K *41/06*
U.S. Cl. 477—143 **7 Claims**



1. A method of controlling an on-coming clutch pressure during an inertia phase of an upshift of a motor vehicle automatic transmission having an input shaft coupled to a vehicle engine and an output shaft coupled to drive the vehicle, the method comprising the steps of:
developing a desired acceleration trajectory of the input shaft;
applying the desired acceleration trajectory to an inverse dynamic model of the transmission during the inertia phase of the upshift to obtain an estimate of a required on-coming clutch torque capacity at a given output torque level of the engine;
developing a feed-forward clutch pressure command based on the estimated clutch torque;
developing on-coming clutch pressure in accordance with the pressure command;
measuring a speed of the input shaft; and
adjusting the pressure command in accordance with a feed-back adjustment based on a deviation of the measured speed from an expected speed of the input shaft to compensate for errors in said dynamic model.

US 6,332,861 B1
AUTOMATIC BLADED TOOL CHANGER
Kazuhisa Otsuka; Masaru Oda, and Kenji Takahashi, all of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan
Filed Jun. 13, 2000, Appl. No. 592,867
Claims priority, application Japan, Jun. 16, 1999, 11-169219
Int. Cl. B23Q *3/157*
U.S. Cl. 483—55 **11 Claims**



1. An automatic bladed tool changer to automatically mount and demount a bladed tool, comprising:
a robot having an arm including a flange at a distal end thereof;
a rotary tool attached to said flange, said rotary tool including a collet chuck;
control means to open and close said collet chuck to mount and demount the bladed tool to and from said rotary tool, the robot being controlled according to a program by said control means; and
a rotating shaft locking unit to fix a rotating shaft of said rotary tool,
said collet chuck and said rotating shaft being rotated relative to each other to close and open said collet chuck to mount and demount the bladed tool to and from said rotary tool.

MISSING PATENTS FROM DECEMBER 25, 2001 OFFICIAL GAZETTE ISSUE

US 6,332,862 B1

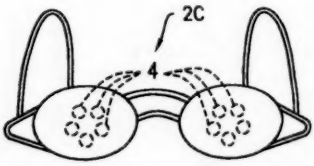
ARTICLES OF CLOTHING INCORPORATING MAGNETS FOR THERAPEUTIC PURPOSES

Michael Zandman, 6 Magnolia La., Colts Neck, N.J. 07722

Filed Dec. 21, 1999, Appl. No. 469,003

Int. Cl. A61N *7/00;* **A41B** *9/00*

U.S. Cl. 600—15 **19 Claims**



1. An article of clothing for use by a wearer having one or more magnets incorporated therein, the one or more magnets being maintained in the areas consisting essentially of those corresponding directly to the areas of the small arteries and veins which supply blood to the erogenous zones of the body.

US 6,332,863 B1

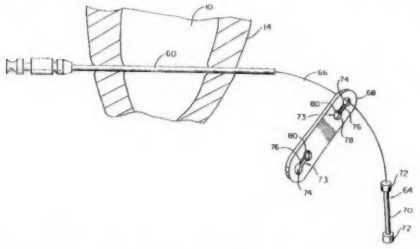
HEART WALL TENSION REDUCTION KIT

Cyril J. Schweich, Jr., St. Paul, and Todd J. Mortier, Minneapolis, both of Minn., assignors to Myocor, Inc., St. Paul, Minn.

Continuation of application No. 09/543,155, filed on Apr. 4, 2000, now Pat. No. 6,165,120, which is a continuation of application No. 09/224,349, filed on Jan. 4, 1999, now Pat. No. 6,165,119, which is a division of application No. 08/933,456, filed on Sep. 18, 1997, now Pat. No. 5,961,440, which is a continuation-in-part of application No. 08/778,277, filed on Jan. 2, 1997, now Pat. No. 6,050,936. This application Oct. 27, 2000, Appl. No. 697,596.

Int. Cl. A61F *2/00;* **A61B** *17/12;* **A61M** *31/00*

U.S. Cl. 600—16 **39 Claims**



1. A kit for treating a heart, comprising:

a guide mechanism having a first end and a second end, said guide mechanism being capable of extending through a heart wall surrounding a heart chamber so that each end of the guide mechanism is external the chamber;

an elongate member having a first end and a second end, said elongate member advanced through the guide mechanism such that, when the guide mechanism extends through the heart wall, the first end and the second end of the elongate member are external the heart chamber; and

an anchoring device capable of coupling the elongate member to the chamber at exterior portions of the chamber.

US 6,332,864 B1

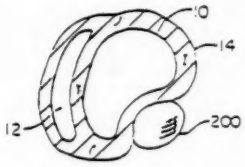
HEART WALL TENSION REDUCTION APPARATUS

Cyril J. Schweich, Jr., St. Paul, and Todd J. Mortier, Minneapolis, both of Minn., assignors to Myocor, Inc., St. Paul, Minn.

Continuation of application No. 09/492,777, filed on Jan. 28, 2000, now Pat. No. 6,162,168, which is a continuation of application No. 08/778,277, filed on Jan. 2, 1997, now Pat. No. 6,050,936. This application Oct. 27, 2000, Appl. No. 697,597.

Int. Cl. A61F *2/02*

U.S. Cl. 600—16 **31 Claims**



1. A method for treating a heart, comprising the steps of:

applying a force on an external wall of a heart chamber to change a cross sectional area of the chamber during at least a portion of systole; and

passively controlling the force during a cardiac cycle such that all interior parts of the chamber remain in direct fluid communication.

US 6,332,865 B1

SELF-ADVANCING ENDOSCOPE

Thomas Julius Borody, 144 Great North Road, Five Dock, New South Wales, 2046; Peter Stephenson, Level 2, 35 Astor Terrace, Brisbane, Queensland 4000; John Begg, and Peter Ayre, both of 126 Greville Street, Chatswood, New South Wales 2067, all of Australia

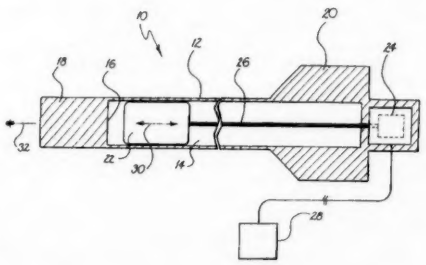
PCT No. PCT/AU99/00005, § 371 Date Aug. 14, 2000, § 102(e) Date Aug. 14, 2000, PCT Pub. No. WO99/34726, PCT Pub. Date Jul. 15, 1999

PCT Filed Jan. 7, 1999, Appl. No. 582,853

Claims priority, application Australia, Jan. 7, 1998, PP1236

Int. Cl. A61B *1/01*

U.S. Cl. 600—114 **15 Claims**



1. A self-advancing endoscope comprising:

an elongated flexible tubular member;

an elongated channel defined by said tubular member and having a distal end wall; piston means slideably disposed in said channel toward said distal end wall; and

means for reciprocating said piston means such that said piston means impacts said distal end wall on an advancing stroke.

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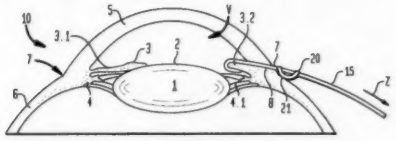
US 6,332,866 B1
IRIS RETRACTOR FOR USE IN SURGICAL PROCEDURE ON THE EYE OF A LIVING BEING

Hans R. Grieshaber, Schaffhausen, and Werner Maag, Glarus, both of Switzerland, assignors to Grieshaber & Co. AG Schaffhausen, Schaffhausen, Switzerland

Filed Mar. 21, 2000, Appl. No. 528,972
Int. Cl. A61B *1/32*
U.S. Cl. 600—236 **23 Claims**



14. An instrument for use in ophthalmic surgery, comprising

an elongated body portion having one end formed with an engagement member for insertion into the anterior chamber of the eye for retracting the iris; and

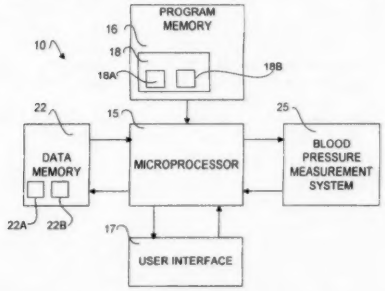
a fixation member slideably secured to the body portion for positioning and fixing the body portion in place,

wherein at least the body portion is made of a flexible polymeric material having a hue which is selected to contrast a hue of the iris of a patient and selected from a plurality of hues to contrast iris hues from different patients.

US 6,332,867 B1
METHOD AND APPARATUS FOR MEASURING VALUES OF PHYSIOLOGICAL PARAMETERS

Yunquan Chen, Delta; Anton Bogdan Zorn, Vancouver; David Sholom Waterman, Delta; Mark Elliot Gelfer, Vancouver; Paul Richard Christensen, Burnaby, and Kevin Daryl Strange, Port Moody, all of Canada, assignors to VSM Technology Inc., Canada

Filed Jun. 9, 1999, Appl. No. 328,432
Int. Cl. A61B *5/00*
U.S. Cl. 600—300 **16 Claims**



1. A method for measuring a value of a blood pressure of a patient, the method comprising:

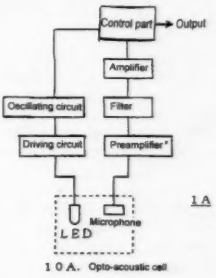
a) under automatic control, performing a sequence of three or more measurements of the blood pressure at spaced apart times to obtain three or more measured values for the blood pressure; and

b) computing a best estimate of the blood pressure from two or more of the measured values without using a first one of the measured values in computing the best estimate.

US 6,332,868 B1
METHOD FOR EVALUATING SKIN CONDITIONS

Makoto Sato; Kunihiro Murata, both of Tochigi; Yasushi Shioya, and Yoshiaki Fujikura, both of Ichikai-machi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 9, 2000, Appl. No. 500,543
Claims priority, application Japan, Feb. 12, 1999, 11-034681
Int. Cl. A61B *05/00*
U.S. Cl. 600—306 **12 Claims**



1. A method for evaluating skin conditions, comprising the steps of:

applying at least two chemical substances to skin;

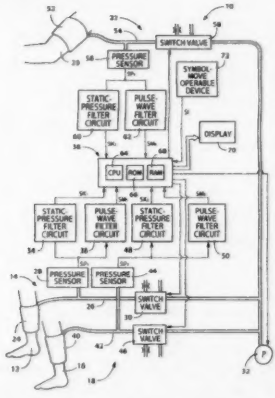
measuring amounts of said at least two chemical substances penetrated into the skin; and

calculating a ratio between the amounts of said at least two chemical substances penetrated into the skin.

US 6,332,869 B1
SUPERIOR-AND-INFERIOR-LIMB BLOOD-PRESSURE INDEX MEASURING APPARATUS

Toshihiko Ogura, Inuyama, and Tomohiro Nunome, Komaki, both of Japan, assignors to Colin Corporation, Komaki, Japan

Filed Apr. 27, 2000, Appl. No. 560,575
Claims priority, application Japan, May 7, 1999, 11-126861; Jun. 1, 1999, 11-153565
Int. Cl. A61B *5/02*
U.S. Cl. 600—490 **7 Claims**



1. An apparatus for measuring a superior-and-inferior-limb blood-pressure index of a living subject, comprising:.

an inferior-limb blood-pressure measuring device which includes a first inflatable cuff adapted to be wound around an inferior limb of the subject, and which measures an inferior-limb blood pressure of the subject based on a first pulse wave obtained while a first pressing pressure of the first cuff is changed;

MISSING PATENTS FROM DECEMBER 25, 2001 OFFICIAL GAZETTE ISSUE

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a superior-limb blood-pressure measuring device which includes a second inflatable cuff adapted to be wound around a superior limb of the subject, and which measures a superior-limb blood pressure of the subject based on a second pulse wave obtained while a second pressing pressure of the second cuff is changed;

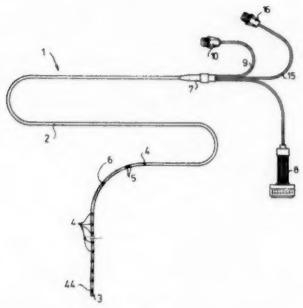
a cuff-pressure changing device which changes the first and second pressing pressures of the first and second cuffs, such that a time when the first pressing pressure being changed becomes equal to an estimated inferior-limb blood pressure coincides with a time when the second pressing pressure being changed becomes equal to an estimated superior-limb blood pressure; and

index determining means for determining the superior-and-inferior-limb blood-pressure index of the subject, based on the inferior-limb and superior-limb blood pressures measured by the inferior-limb and superior-limb blood-pressure measuring devices while the first and second pressing pressures of the first and second cuffs are changed by the cuff-pressure changing device.

US 6,332,870 B1
REGIONAL FLOW CATHETER

Paulus Cornelis Maria Van Den Berg, Amsterdam, Netherlands, assignor to Ideamed N.V., Curacao, Netherlands Antilles

PCT No. PCT/NL98/00316, § 371 Date Dec. 21, 1999, § 102(e) Date Dec. 21, 1999, PCT Pub. No. WO98/53735, PCT Pub. Date Dec. 3, 1998
PCT Filed May 29, 1998, Appl. No. 424,758
Claims priority, application Netherlands, May 30, 1997, 1006178
Int. Cl. A61B *5/02*
U.S. Cl. 600—504 **13 Claims**



1. Method for measuring the flow through a vein, the vein being connected to at least a venous duct, comprising the steps of:

generating a first signal that corresponds to the resistance over a first electrode pair, the first electrode pair being located upstream of the connection of the venous duct to the vein;

generating a second signal that corresponds to the resistance over a second electrode pair, the second electrode pair being located downstream of the connection of the venous duct to the vein;

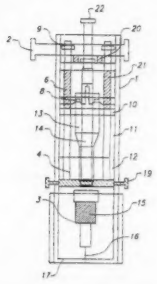
determining the difference signal between the first and the second signal; and

converting the difference signal into the flow through the vein with the aid of analogue or digital means.

US 6,332,871 B1
BLOOD AND INTERSTITIAL FLUID SAMPLING DEVICE

Joel S. Douglas, Los Altos Hills; Jeffrey N. Roe, San Ramon; Ryszard Radwanski, Morgan Hill; Henry M. Grage, Danville, and Michael S. Sanchez, Mountain View, all of Calif., assignors to Amira Medical, Scotts Valley, Calif.

PCT No. PCT/US97/08762, § 371 Date May 10, 1999, § 102(e) Date May 10, 1999, PCT Pub. No. WO97/42888, PCT Pub. Date Nov. 20, 1997
Provisional application No. 60/017,133, filed on May 17, 1996.
This PCT application May 16, 1997, Appl. No. 180,839.
This patent is subject to a terminal disclaimer.
Int. Cl. A61B *5/00*
U.S. Cl. 600—583 **29 Claims**



1. A device for obtaining a sample of body fluid through the skin comprising:

a housing member suitable for use and adapted to contain a needle for piercing the skin;

a spring member in the housing for urging the needle to protrude from the end of the housing sufficient to penetrate the skin;

a plunger member for retracting the needle against the spring tension and a trigger member to engage the plunger to hold the needle retracted until released by the trigger;

a stop member to limit the depth of needle penetration of the skin when released by the trigger;

a sample container communicating with the needle for receiving the sample from the needle;

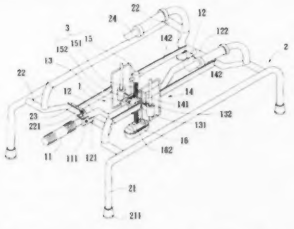
a second spring for retracting the needle from the skin and a suction cam and plunger activated upon the retraction of the needle for drawing the sample of fluid which accumulates on the surface of the skin into the sample container; and

a skin stimulation member constructed for contacting and stimulating the skin by at least one of mechanical action, piezoelectric action, ultrasonic action, electrical action, and thermal action.

US 6,332,872 B1
PORTABLE CARDIOPULMONARY RESUSCITATION DEVICE WITH PRECISE COMPRESSION DEPTH AND UNIFORMITY

Charles Young, 121 N. Almansor St., Alhambra, Calif. 91801

Filed Jun. 26, 2000, Appl. No. 603,348
Int. Cl. A61H *31/00*
U.S. Cl. 601—41 **10 Claims**



1. Portable cardiopulmonary resuscitation device with precise compression depth and uniformity, comprising:

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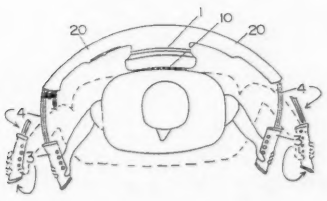
a frame body composed of two transverse beams and two U-shaped bars which are perpendicularly connected with the transverse beams to form the frame body with four supporting legs; and

a compression mechanism including a connecting bar, one end of which is pivotally connected with one of the transverse beams of the frame body, while the other end of which is a free end connected with a handle positioned above the other transverse beam for up and down movement and operation, a set of movable sleeve and retaining shaft being disposed on at least one side of, above or below the connecting bar, the movable sleeve being fitted around the vertical retaining shaft and restricted thereby to only move up and down, the movable sleeve being connected with the connecting bar, while the vertical retaining shaft being fixed on the frame body via a fixing frame and bridge bars so as to ensure up and down movement of the connecting bar, a compression depth adjusting mechanism being disposed on the connecting bar, a lower end of the compression depth adjusting mechanism being connected with a plunger for pressing the heart of the person who needs the operation,

wherein, the compression depth of the plunger is controlled and adjusted by a mechanical device for elevating and descending, hydraulic measure or pneumatic measure, one of the transverse beams of the frame body serving as a stopper for restricting the compression depth of the connecting bar and the plunger and avoiding over-compression of the heart.

US 6,332,873 B1
HAND-HELD MASSAGING APPARATUS
Haruhiko Naruse, Hikone, and Koichi Hashimoto, Sakata-gun, both of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan
Filed Nov. 22, 1999, Appl. No. 444,386
Claims priority, application Japan, Nov. 20, 1998, 10-331360
Int. Cl. A61H *1/00;7/00*
U.S. Cl. 601—135 **21 Claims**



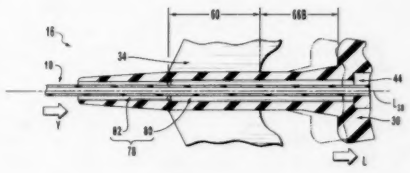
1. A massaging apparatus, comprising:

a head unit configured to massage a body of a user and having opposite sides;

a pair of housings connected to said opposite sides respectively and extending in opposite directions from said head unit; and

a pair of arms configured to be held by the user and provided to said pair of housings respectively, said pair of arms having an arc-shape along lengths of said pair of arms and being bendable along the lengths.

US 6,332,874 B1
COUPLING AND STABILIZATION SYSTEM FOR PROXIMAL END OF CATHETER
Kenneth A. Eliasen, Queensbury, N.Y.; Kelly B. Powers, North Salt Lake, and Daniel T. Schlehuber, Sandy, both of Utah, assignors to C.R. Bard, Inc., Murray Hill, N.J.
Continuation-in-part of application No. 29/091,063, filed on Apr. 20, 1999, now Pat. No. Des. 408,530. This application Aug. 28, 1998, Appl. No. 143,275.
Int. Cl. A61M *5/32*
U.S. Cl. 604—174 **38 Claims**



1. An implantable vascular access catheter comprising:

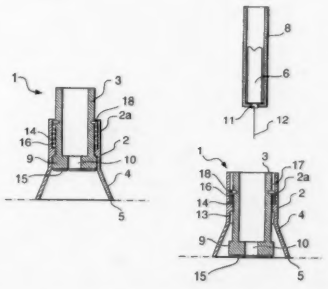
a. a conduit of relatively tough biocompatible material enclosing a longitudinally extending fluid flow lumen, said conduit having a distal end configured as an elongated flexible catheter for disposition in the vascular system of a patient and a proximal end configured as a catheter coupling hub by which to effect mechanical and fluid interaction with extracorporeal medical equipment;

b. an elastomeric sleeve suitable for skin contact applications encircling the distal end of said catheter coupling hub and a portion of said conduit distal of and adjacent to said distal end of said catheter coupling hub;

c. a pair of stabilization wings extending laterally from said sleeve distal of said distal end of said catheter coupling hub; and

d. resilient means between said distal end of said catheter coupling hub and said stabilization wings for reducing motion imparted to the skin of a patient through said stabilization wings due to motion of said catheter coupling hub, when said stabilization wings are secured to the skin of a patient.

US 6,332,875 B2
NEEDLE INJECTION-FACILITATING DEVICE
Thomas Randall Inkpen, 37 Kelly Drive, Dartmouth, Nova Scotia, Canada, B2W 1N5, and Laura Jean Williamson, 21 Saratoga Drive, Dartmouth, Nova Scotia, Canada, B2X 3P3
Filed Apr. 15, 1999, Appl. No. 292,470
Claims priority, application Canada, Apr. 15, 1998, 2229522
Int. Cl. A61M *5/00*
U.S. Cl. 604—181 **6 Claims**



1. A needle injection-facilitating device comprising:

(a) an outer hollow sleeve opening into a flared base;

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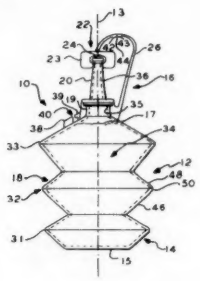
(b) an inner hollow sleeve having an interior surface configured to receive a syringe or medication pen, said inner sleeve having a retaining collar at its distal end with an aperture sized to receive a hub of a hypodermic needle and through which the needle projects, wherein said inner sleeve is capable of sliding movement inside said outer sleeve, between a retracted position and an operating position; and

(c) biasing means disposed between the inner sleeve and the outer sleeve which upwardly biases the inner sleeve to said retracted position in which a hypodermic needle received within said inner sleeve is shielded from view by the base of said outer sleeve;

whereby placement of the flared base of said outer sleeve in contact with an injection site followed by manual application of a downward axial force to a syringe or medication pen received in said inner sleeve advances the inner sleeve from the retracted position to the operating position against the bias of said biasing means to effect administration of an injection; and subsequent removal of said downward force permits movement of said inner sleeve under the influence of said biasing means back to the retracted position and concomitant extraction of the hypodermic needle of said syringe or medication pen from the injection site.

US 6,332,876 B1
COMPRESSIBLE SYRINGE
Richard Q. Poynter, 711 Pinehurst Way, Palm Beach Gardens, Fla. 33419, and Albert D. Bailey, 1133 The Pointe Dr., West Palm Beach, Fla. 33409
Filed Sep. 8, 1997, Appl. No. 925,053
Int. Cl. A61M *5/178*
U.S. Cl. 604—212 **6 Claims**



1. A one piece molded syringe, comprising:

a hollow body at least partially filled with liquid, said hollow body having a longitudinal axis, a closed rear wall, a bellows adjoining said closed rear wall, and a forward portion adjoining said bellows opposite said rear wall and including a nozzle having an outer end;

a fracturable closure seal formed integrally with said outer end of said nozzle for closing said nozzle until initial use of said syringe;

an elongate pliable tether connected to said seal and said hollow body and connecting said seal to said hollow body to prevent separation of said seal from said hollow body;

first fastening means provided on said hollow body and second fastening means provided on said tether and said fastening means for being engaged to fasten said tether to said hollow body upon said seal being broken away from said outer end of said nozzle, said first fastening means comprising a pair of tabs extending outwardly from said body and providing a first indentation therebetween and said second fastening means comprising a portion of said tether providing a second indentation and wherein said indentations are engageable to fasten said tether to said body;

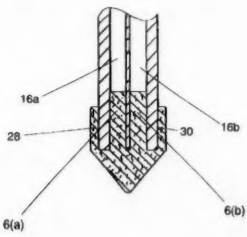
said bellows including a plurality of bellow rings each having a diameter and wherein the diameters of said bellows rings increase successively from said rear wall toward said nozzle;

each bellows ring including a rearward frusto-conical wall having a thickness and disposed toward said closed rear wall and a forward frusto-conical wall having a thickness and disposed toward said nozzle and wherein the thickness of said rearward frusto-conical wall is greater than the thickness of said forward frusto-conical wall, said walls converging at an apex and said rearward frusto-conical wall at a first included angle with respect to a plane perpendicular to said axis and extending through said apex and said forward frusto-conical wall at a second included angle with respect to said plane and said first included angle being greater than said second included angle;

said fracturable closure seal including a sealing member formed integrally with and extending transversely with respect to said sealing member and for having torque applied thereto to fracture and remove said sealing member from said outer end of said nozzle; and

wherein said first included angle is about 45° and wherein said second included angle is from about 30° to about 35°.

US 6,332,877 B1
OSTOMY TUBE PLACEMENT TIP
Lester D. Michels, Eden Prairie, Minn., assignor to Novartis AG, Berne, Switzerland
Filed May 12, 1998, Appl. No. 76,442
Int. Cl. A61M *5/00;31/00*
U.S. Cl. 604—263 **5 Claims**



1. A method for the insertion of a gastrostomy or jejunal feeding tube into an ostomy of a patient comprising the attachment of a placement tip comprising a substantially tapered head portion comprising a planar base and a substantially cylindrical body portion substantially perpendicular to the base to the end of a gastrostomy or jejunal feeding tube by inserting the body portion of said tip into the end of said tube to plug said tube, placing the tip against the ostomy of said patient and applying pressure on the tube against the patients body until the attached tip dilates the ostomy so as to allow for the entry of the tube into the ostomy, and thereafter exerting fluid pressure into the tube and detaching the tip inside the patient.

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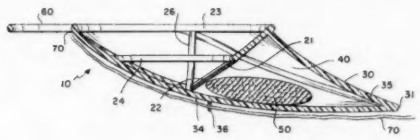
US 6,332,878 B1
DEVICES AND METHODS FOR CAPTURING AND CONTAINING MENSTRUAL FLOW

Daniel X. Wray, Vista; Lisa A. O'Carroll, Oceanside; Robert S. Billups, Vista; Thomas D. Walter, San Marcos; Harold L. Knudsen, Escondido; Lara A. Kasum, Vista; Robert L. DeArmond, Oceanside, and Cher Haavind, Encinitas, all of Calif., assignors to Moonstruck, LLC, Vista, Calif.

Filed Sep. 2, 1999, Appl. No. 388,893
Int. Cl. A61F *5/44*
U.S. Cl. 604—328 **14 Claims**

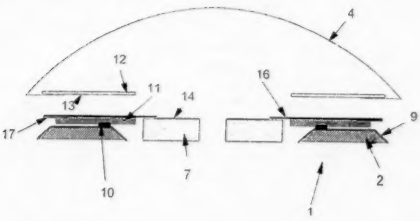


1. A device for capturing and containing menstrual flow from a female human being, comprising a cup made of flexible material shaped to sealingly contact the cervix between the anterior and posterior fornices, the cup containing an intravaginal reservoir for receiving menstrual flow and a port permitting menstrual flow discharged from the cervix to enter the reservoir.

US 6,332,879 B1
OSTOMY APPLIANCE

Inger Mann Nielsen, Frederiksberg; Eskil Hoejland Olsen, Klampenborg; Laila Busk Gothjaelpsen, Hvidovre; Carsten Sletten, Koebenhavn, and Danuta Ciok, Nivaa, all of Denmark, assignors to Coloplast A/S, Humlebaek, Denmark

PCT No. PCT/DK98/00212, § 371 Date Feb. 25, 2000, § 102(e) Date Feb. 25, 2000, PCT Pub. No. WO98/53771, PCT Pub. Date Dec. 3, 1998
PCT Filed May 25, 1998, Appl. No. 424,230
Claims priority, application Denmark, May 26, 1997, 0598/97; Dec. 22, 1997, 1507/97
Int. Cl. A61F *5/44*
U.S. Cl. 604—344 **10 Claims**

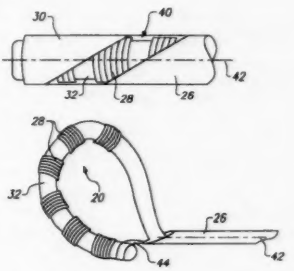


9. An ostomy sealing member **(5)** in the form of a moldable mass or ring which has a sufficient adhesiveness to secure a sealing member to skin and seal around an ostomy and between the ostomy and an ostomy appliance adapted to receive secretions from the ostomy, which sealing member has a sufficient cohesion to be removed in one piece, independently of removal of the ostomy appliance, without leaving adhesive remaining on the skin or the ostomy appliance, said sealing member having a hole **(3)** for accommodating a stoma and said sealing member having balanced plastic and elastic properties allowing a temporary enlarging of the hole for receiving the stoma by everting or rolling an inner rim of the hole while placing the sealing member around the stoma.

US 6,332,880 B1
LOOP STRUCTURES FOR SUPPORTING MULTIPLE ELECTRODE ELEMENTS

Yi Yang, San Francisco; James G Whayne, Saratoga; Sidney D Fleischman, Menlo Park; Russell B Thompson, Los Altos, and David L. McGee, Sunnyvale, all of Calif., assignors to EP Technologies, Inc., San Jose, Calif.

Filed Dec. 19, 1996, Appl. No. 769,856
This patent is subject to a terminal disclaimer.
Int. Cl. A61M *25/01*
U.S. Cl. 604—528 **31 Claims**

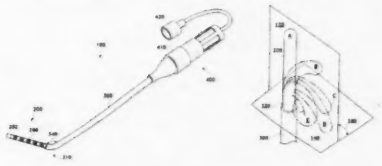


1. An assembly, comprising:
an outer member including a side wall defining an interior bore, a distal region, and an opening in the sidewall,
a flexible member located within the interior bore, defining a distal region and including a prebent region that bows relative to the distal region of the flexible member when outside the outer member,
a coupler fixedly connected to the distal region of the outer member and the distal region of the flexible member such that the distal region of the flexible member will bow outwardly through the opening and the prebent region will bow relative to the distal region of the flexible member in response to sliding movement of the flexible member toward the distal region of the outer member, and
at least one operative element on the flexible member.

US 6,332,881 B1
SURGICAL ABLATION TOOL

David J. Carner, Fremont; Reynaldo P. Hilario, Sunnyvale, and Mahmoud K. Seraj, Mountain View, all of Calif., assignors to Cardima, Inc., Fremont, Calif.

Filed Sep. 1, 1999, Appl. No. 387,889
Int. Cl. A61I *18/18*
U.S. Cl. 606—41 **26 Claims**



1. A deflectable surgical ablation assembly for forming ablations during open heart or open chest surgery, said deflectable surgical ablation assembly comprising:
a main body comprising a rigid or semi-rigid elongate member capable of transmitting axial forces applied by a surgeon to tissue being ablated, and defining a lumen and having a distal end and a proximal end, the member having a preformed angle at the distal end which defines a first plane of deflection; and
a flexible tip disposed distally of said main body, said tip housing (1) a deflection mechanism for deflecting the tip

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about a second plane of deflection different than said first plane and (2) at least one electrode disposed on an outer surface of the tip.

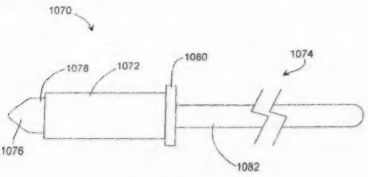
US 6,332,882 B1
SPINE DISTRACTION IMPLANT

James F. Zucherman; Ken Y. Hsu, both of San Francisco; Charles J. Winslow, Walnut Creek, and Henry A. Klyce, Piedmont, all of Calif., assignors to St. Francis Medical Technologies, Inc., Concord, Calif.

Division of application No. 09/175,645, filed on Oct. 20, 1998, now Pat. No. 6,068,630, which is a continuation-in-part of application No. 08/958,281, filed on Oct. 27, 1997, now Pat. No. 5,860,977, which is a continuation-in-part of application No. 08/778,093, filed on Jan. 2, 1997, now Pat. No. 5,836,948. This application Dec. 28, 1999, Appl. No. 474,038.

Int. Cl. A61B *17/70*

U.S. Cl. 606—61 **33 Claims**



21. An implant system for relieving pain associated with at least one of the spine, and associated tissues and structures, which implant is positionable between adjacent spinous processes of the spine, the implant system comprising:

a sleeve which is positionable between two adjacent spinous process, and an insertion guide wherein said insertion guide is extended from said sleeve preparatory to said guide and sleeve being positioned between two adjacent spinous processes; and

said sleeve is comprised of a super-elastic material.

US 6,332,883 B1
SPINE DISTRACTION IMPLANT

James F. Zucherman; Ken Y. Hsu, both of San Francisco; Charles J. Winslow, Walnut Creek, and Henry A. Klyce, Piedmont, all of Calif., assignors to St. Francis Medical Technologies, Inc., Concord, Calif.

Continuation of application No. 09/473,173, filed on Dec. 28, 1999, now Pat. No. 6,235,030, which is a continuation of application No. 09/179,570, filed on Oct. 27, 1998, now Pat. No. 6,048,342, which is a continuation-in-part of application No. 09/175,645, filed on Oct. 20, 1998, now Pat. No. 6,068,630, which is a continuation-in-part of application No. 08/958,281, filed on Oct. 27, 1997, now Pat. No. 5,860,977, which is a continuation-in-part of application No. 08/778,093, filed on Jan. 2, 1997, now Pat. No. 5,836,948. This application Nov. 6, 2000, Appl. No. 706,991.

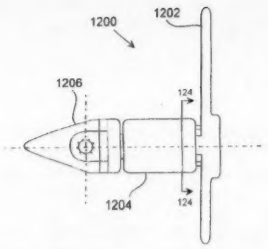
This patent is subject to a terminal disclaimer.

Int. Cl. A61B *17/70*

U.S. Cl. 606—61 **10 Claims**

1. An implant for relieving pain associated with at least one of the spine and surrounding tissues and structures, which implant is positionable between spinous processes of the spinal column, the implant comprising:

a first wing with a central body extending therefrom, said central body having a longitudinal axis;



a sleeve positioned over said central body with said sleeve being able to rotate about said longitudinal axis of said central body so as to be positionable relative to said central body in order to aid in positioning said implant between spinous processes; and wherein said sleeve is oval in cross-section in a plane which is substantially perpendicular to the longitudinal axis.

US 6,332,884 B1
TWO PHASE THERMALLY DEFORMABLE BIOCOMPATIBLE ABSORBABLE POLYMER MATRIX FOR USE IN MEDICAL DEVICES

Kevin Cooper, Warren, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Division of application No. 09/055,342, filed on Apr. 6, 1998, now abandoned. This application Feb. 2, 2000, Appl. No. 497,060.

Int. Cl. A61F *2/28;2/44;* **A61B** *17/56;17/58*

U.S. Cl. 606—77 **7 Claims**

1. A method of shaping a surgical article having a portion thereof formed from an absorbable polymeric matrix, said matrix comprising a continuous phase and a dispersed phase of a crystalline or semi-crystalline material that has a melting temperature lower than the melting temperature of said continuous phase and that forms a distinct phase that provides a visual cue upon melting of said material, the method comprising: heating that portion of the surgical article that is formed from the absorbable polymeric matrix to a minimum temperature that is at least about the melting temperature of the material and is effective to provide said visual cue to a maximum temperature of about 65° C., shaping that portion of the surgical article to the desired final shape while the visual cue is present; and allowing the surgical article to cool.

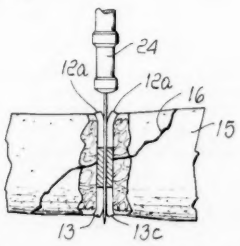
US 6,332,885 B1
SYNTHESIS DEVICE FOR ORTHOPAEDIA AND TRAUMATOLOGY

Pasquale Martella, Via Certosa, 3, 35010 Vigodarzere, Italy

Continuation of application No. PCT/IB99/00801, filed on May 4, 1999. This application Nov. 2, 2000, Appl. No. 703,633.

Int. Cl. A61B *17/86*

U.S. Cl. 606—78 **8 Claims**



1. A synthesis device for orthopaedia and traumatology, comprising a cylinder which is made of a Ni—Ti alloy having shape

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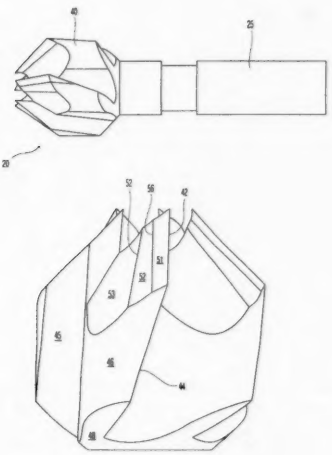
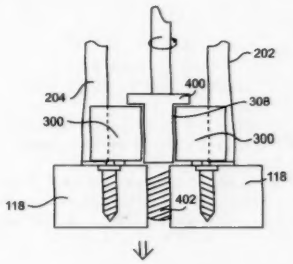
memory, at least one of two ends of said cylinder being split outwardly openable by heating, assuming a memorized shape and maintaining said memorized shape after cooling, said cylinder having a chosen length such that when inserted in a through hole traversing a fracture line of a fractured region of a bone said at least one of the two ends protrudes by a short extent from an outer cortical region of the bone so that said split outwardly opening by heating produces a compaction and coupling of two fracture segments of said fractured region of the bone, said cylinder having a median region which continues with two end regions which are split and divided into a plurality of sectors, an axial hole being provided for insertion of a heating electric scalpel.

US 6,332,886 B1
SURGICAL REAMER AND METHOD OF USING SAME
James M. Green, Portland, Oreg.; Alexandre N. Perrier, Basel, Switzerland, and Stanley J. Kmiec, Jr., Coopersburg, Pa., assignors to Synthes (USA), Paoli, Pa.
Provisional application No. 60/118,485, filed on Feb. 3, 1999. This application Feb. 2, 2000, Appl. No. 495,932.
Int. Cl. A61B *17/16*
U.S. Cl. 606—80 **18 Claims**



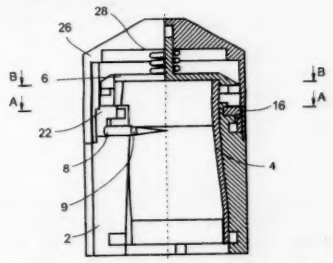
1. A device for reaming a medullary canal of a bone comprising:
a rotatable drive shaft having proximal and distal ends and connected at a proximal end to a rotational drive element for causing rotation of the drive shaft; and
a reamer head coupled to the distal end of the drive shaft, said reamer head comprising:
a tubular shank having a longitudinal axis and engaging the distal end of the drive shaft; and
a cutting head integral with the shank and having a plurality of blades and flutes therebetween for cutting and reaming of bone;
wherein each blade has inner and outer blade walls, a front cutting portion and a helical side cutting portion, with the front cutting portion comprising at least two planar surfaces and a front cutting edge defined by an intersection between the inner blade wall and one of the planar surfaces.

US 6,332,887 B1
SPINAL FUSION INSTRUMENTATION SYSTEM
Benjamin D. Knox, 4895 Judith's Garden Rd., Oxford, Md. 21654
Provisional application No. 60/127,950, filed on Apr. 6, 1999. This application Jul. 7, 1999, Appl. No. 348,870.
Int. Cl. A61B *17/15*
U.S. Cl. 606—87 **19 Claims**



1. A spinal fusion instrument comprising:
a bushing defining an opening therethrough, said opening configured to guide a cutting tool to allow parallel decortication of opposing endplates of two contiguous vertebrae; and
means for mounting said bushing on said two contiguous vertebrae.

US 6,332,888 B1
FINGER-GUIDED SURGICAL INSTRUMENT
Gil Levy, Tel Aviv, and Moshe Maroko, Hod Hasharon, both of Israel, assignors to Urogyn Ltd., Ramat Gan, Israel
Continuation-in-part of application No. PCT/IL99/00084, filed on Feb. 9, 1999. This application Aug. 12, 1999, Appl. No. 372,578.
Claims priority, application Israel, Feb. 12, 1998, 1232758
Int. Cl. A61B *17/062;17/28;17/32*
U.S. Cl. 606—144 **17 Claims**



17. A finger-guided surgical instrument, comprising:
(a) a thimble-like element being adapted to surround at least a portion of a surgeon's finger while at least partially exposing the ventral tactile portions of the distal phalanx thereof, so as to enable the surgeon to tactile sense a body location to be treated;
(b) an ejectable surgical tool being engaged within a housing being formed within, or connected to, a rigid wall of said thimble-like element; and
(c) a mechanism for ejecting said surgical tool from said thimble-like element, so as to enable the surgeon to operate said body location, said mechanism including a ratchet member being disposed between said thimble-like element and the

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surgeon's finger so as to eject said surgical tool from said thimble-like element by twisting back and forth the surgeon's finger.

US 6,332,889 B1

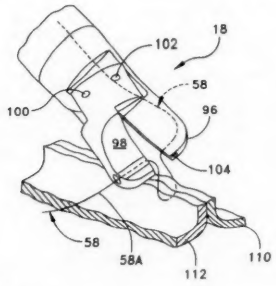
SURGICAL SUTURING INSTRUMENT AND METHOD OF USE

Gregory E. Sancoff; Frederic P. Field, both of North Hampton, N.H., and Douglas A. Fogg, Merrimac, Mass., assignors to Onux Medical, Inc., Hampton, N.H.

Provisional application No. 60/098,152, filed on Aug. 27, 1998, Provisional application No. 60/118,039, filed on Feb. 1, 1999. This application Aug. 3, 1999, Appl. No. 368,273.

Int. Cl. A61B *17/04*

U.S. Cl. 606—148 **60 Claims**



1. A device for fixing a flexible elongated element to a portion of a subject, said device comprising:

structure for retaining the flexible elongated element;

advancement means for longitudinally advancing the flexible elongated element from a proximal end of said device toward a distal end of said device with sufficient force to pass the element through the portion of the subject while said advancement means remain outside of the portion of the subject; and

securing means for securing the element to the subject and for variably adjusting a securing force applied by the flexible elongated element to the portion of the subject.

US 6,332,890 B1

MICROKERATOTOME FOR THE DISSECTION OF LAMELLAE OF CORNEAL TISSUE

Angel Ramon Gutierrez Ortega; Emilio Sanz Amoros, and Vicente Castello Pico, all of Valencia, Spain, assignors to Novosalud, S.L., Spain

Filed Aug. 17, 2000, Appl. No. 640,620

Int. Cl. A61B *17/32*

U.S. Cl. 606—166 **11 Claims**

1. A microkeratotome for the dissection of lamellae of corneal tissue, said microkeratotome comprising:

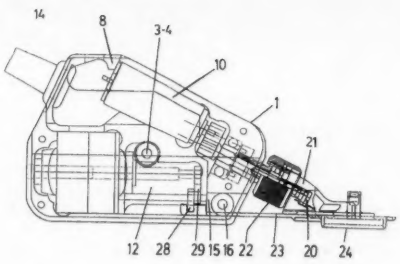
a suction ring configured for immobilizing an eyeball;

a sliding and anchoring part positioned adjacent to said suction ring;

a head comprising a cutting unit, said cutting unit comprising a cutting blade, said head positioned adjacent to said sliding and anchoring part;

a body connected to said head through an axle, said body comprising:

a mechanical transmission system comprising:



an oscillation motor for imparting oscillatory movement to said cutting blade; and

a linear motor for imparting linear movement to said sliding and anchoring part; and

a side cover detachably connected to said body, such that detachment of said side cover enables removal of said mechanical transmission system.

US 6,332,891 B1

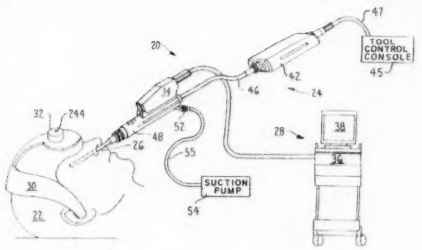
SYSTEM AND METHOD FOR PERFORMING IMAGE GUIDED SURGERY

David M. Himes, Los Gatos, Calif., assignor to Stryker Corporation, Kalamazoo, Mich.

Filed Feb. 16, 1999, Appl. No. 251,138

Int. Cl. J61B *17/32*

U.S. Cl. 606—169 **19 Claims**



1. A surgical tool assembly comprising:

a handpiece, said handpiece having:

a base;

a power producing assembly located in said base;

a coupling assembly mounted to said base for releasably attaching an accessory to said handpiece so that the accessory receives power from said power producing assembly, said coupling assembly having a run state in which the accessory is attached to said coupling assembly and an accessory load state in which the accessory is removable from said coupling assembly; and

a state marker attached to said coupling assembly, wherein the state of said state marker is controlled by said coupling assembly so that, when said coupling assembly undergoes a transition from the run state to the accessory load state, said state marker undergoes a state transition; and

a sensing unit, said sensing unit comprising;

a housing configured to be releasably secured to said base of said handpiece;

a position-locating device disposed in said housing configured to produce signals used to determine the position of said sensing unit; and

a handpiece state sensor fitted to said housing, said handpiece state sensor configured to monitor the state of said state marker and to produce a handpiece state signal representative of the state of said state marker.

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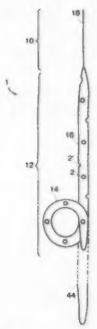
US 6,332,892 B1
MEDICAL DEVICE WITH ONE OR MORE HELICAL COILS

Joseph P. Desmond, III, and Doug Walls, both of Bloomington, Ind., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Mar. 2, 1999, Appl. No. 260,596
Int. Cl. A61F *2/06*
U.S. Cl. 623—1.15 **13 Claims**



1. A medical device for draining fluid, comprising:

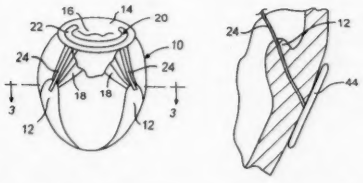
(A) a first elongated section having a first cross-sectional area and comprising a tubular proximal section generally extending along an axis, the proximal section in connection with a distal section, the distal section comprising a curl offset from the axis; and

(B) a second elongated section having a second cross-sectional area and extending from the first elongated section, the second cross-sectional area being smaller than the first cross-sectional area and the second elongated section comprising two or more non-concentric coiled structures, at least two of the two or more coiled structures each having a plurality of turns.

US 6,332,893 B1
VALVE TO MYOCARDIUM TENSION MEMBERS DEVICE AND METHOD

Todd J. Mortier, Minneapolis, and Cyril J. Schweich, Jr., St. Paul, both of Minn., assignors to Myocor, Inc., St. Paul, Minn.

Filed Dec. 17, 1997, Appl. No. 992,316
Int. Cl. A61F *2/24*
U.S. Cl. 623—2.36 **20 Claims**



1. A device for repairing an in situ valve of a heart ventricle, the in situ valve having leaflets and an annulus, the device comprising:

a basal anchor configured to fixedly connect to the in situ valve;

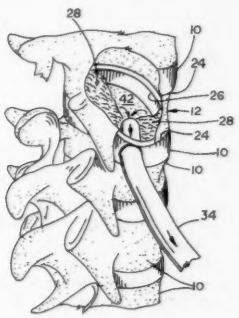
at least one tension member configured to extend from the basal anchor to muscles of the ventricle; and

a secondary anchor configured to connect the at least one tension member to muscles of the ventricle.

US 6,332,894 B1
POLYMER FILLED SPINAL FUSION CAGE

Gregory C Stalcup, Columbia City, and Antony J. Lozier, Warsaw, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Mar. 7, 2000, Appl. No. 520,893
Int. Cl. A61B *17/70*
U.S. Cl. 623—17.11 **22 Claims**



1. A method of fusing adjacent vertebrae in a spine, comprising the steps of:

forming an access hole in an annulus of a disc between the adjacent vertebrae;

removing the nucleus within the disc to form a cavity surrounded by said annulus;

placing a generally annular bag within said cavity;

filling said bag with a polymer;

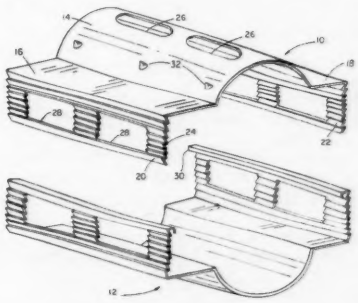
injecting bone particles into a portion of said cavity surrounded by said annular bag; and

hardening said polymer.

US 6,332,895 B1
EXPANDABLE INTERVERTEBRAL FUSION IMPLANT HAVING IMPROVED STABILITY

Loubert Suddaby, 76 Tanglewood Dr., Orchard Park, N.Y. 14127

Filed Mar. 8, 2000, Appl. No. 521,383
Int. Cl. A61F *2/44*
U.S. Cl. 623—17.11 **5 Claims**



1. An expandable intervertebral fusion implant comprising

a pair of shells adapted to be assembled to form a hollow body, each of said shells comprising an arcuate central portion, a pair of wings extending in opposite directions from opposite edges of said central portion, and a pair of parallel side walls extending in a common direction from respective outer edges of the wings, and

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means on the shells for permitting unidirectional expansion of the implant from a retracted initial height to an expanded installed height,

wherein each of said wings has a width equal to at least 20% of that of the implant.

US 6,332,896 B1
ORTHOPAEDIC IMPLANT WITH PROXIMAL COLLAR

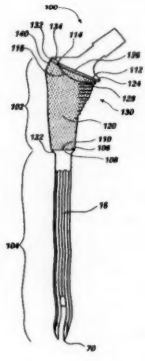
Barry Hubbard, Draper, Utah; Timothy McTighe, Chagrin Falls, Ohio; Jerry Kee, Palm Beach Gardens, Fla., and Paul Mraz, Cleveland, Ohio, assignors to Ortho Development Corporation, Draper, Utah

Continuation-in-part of application No. 09/037,643, filed on Mar. 10, 1998, now abandoned, which is a continuation of application No. 08/600,118, filed on Feb. 12, 1996, now Pat. No. 5,725,594, which is a continuation of application No. 08/274,956, filed on Jul. 14, 1994, now abandoned. This application Nov. 12, 1998, Appl. No. 190,423.

This patent is subject to a terminal disclaimer.

Int. Cl. A61F *2/34*

U.S. Cl. 623—23.24 **28 Claims**



1. A prosthetic component implantable into a hollow interior portion of a first bone, said prosthetic component comprising:

a proximal body;

a stem disposed on a lower portion of the proximal body and extending therefrom in a distal direction, said stem having a longitudinal axis, wherein a distal-most portion of the proximal body is wider than a proximal-most portion of the stem such that the stem and the proximal body cooperatively form a convex corner therebetween, said convex corner defining a boundary between said distal-most portion of the proximal body and said proximal-most portion of the stem; and

a collar disposed on the proximal body and extending outward therefrom in a sideways direction with respect to the longitudinal axis of the stem to thereby define a ledges;

wherein the collar extends outward from the proximal body in a medial direction and in a posterior direction and in an anterior direction such that the ledge comprises a tri-directional, continuous medial-posterior-anterior overhang;

wherein the overhang includes a rounded, bowl-shaped, non-planer undersurface.

US 6,332,897 B1
ASSAY METHODS

Michael Phillip Weiner, and Richard Gordon Buckholz, both of Cary, N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Filed Mar. 27, 1998, Appl. No. 49,325

Int. Cl. C12Q *1/68;* **C12N** *15/64*

U.S. Cl. 735—6 **10 Claims**

4. A method for detecting an interaction between a first test protein and a second test protein, comprising:

(a) providing yeast or bacterial host cells of opposite mating type, one or both of which contain a reporter gene which expresses a detectable protein when the reporter gene is activated by an amino acid sequence including a transcriptional activation domain when the transcriptional activation domain is in sufficient proximity to the reporter gene;

(b) providing a first chimeric gene, the first chimeric gene comprising a DNA sequence that encodes a first hybrid protein, the first hybrid protein comprising:

(i) a DNA-binding domain that recognizes a binding site on the reporter gene in the host cell; and

(ii) a first test protein or fragment thereof that is to be tested for interaction with at least one second test protein or fragment thereof;

(c) providing a second chimeric gene, the second chimeric gene comprising a DNA sequence that encodes a second hybrid protein, the second hybrid protein comprising:

(i) the transcriptional activation domain; and

(ii) a second test protein or fragment thereof that is to be tested for interaction with the first test protein or fragment thereof; wherein interaction between the first test protein and the second test protein in the host cell causes the transcription activation domain to activate transcription of the reporter gene;

(d) introducing the second chimeric gene into a host cell of a first mating type such that the second hybrid protein is expressed and subsequently introducing said cells into an arraying means thereby creating a master library plate;

(e) introducing cells from the master library plate into a second arraying means in liquid medium, thereby creating a mating set;

(f) introducing the first chimeric gene into a host cell of the opposite mating type of the host cell in step (d) such that the first hybrid protein is expressed and subsequently introducing said cell into the mating set, thereby allowing mating to occur in liquid medium;

(g) selecting for outgrowth of cells which express the reporter gene, wherein expression of the reporter gene is indicative of an interaction between the first test protein and the second test protein in that cell.

197-258 D-01 -- 3 : QL 3

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

December 10-14, 2001

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-12	OPP (R)	99,915	Haverly Systems, Inc. v. Omni Flow Computers, Inc.	2(d)	Request for Reconsideration Denied [Opposition Dismissed]	"OMNI" [computer software]	"OMNI" [flow measurement and control computers featuring integrally attached keypads for the measurement and control of liquid hydrocarbon and gas flows; printed matter, namely, user manuals for measurement and control computers and controllers for use in the measurement and control of hydrocarbon liquid and gas flows]		No
12-12	OPP	114,061	The Toro Company v. ToroHead, Inc.	2(d); dilution [Secs. 13 and 43(c)]	Opposition Dismissed	a number of marks incorporating the word "TORO" [for a variety of goods and services, including grass cutting machinery and irrigation systems]	"ToroMR" (and bull's head design) [very low reluctance, thin film magnetic reading and writing heads for sale to OEM manufacturers of high performance computer disk drives]		Yes

(I)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-12	EX	75/572,042	Original Hot Rod Grill, L.L.C.	2(d)	Refusal Affirmed (as to both cited registrations)		"ORIGINAL HOT ROD GRILL" [restaurant services]	"HOT ROD CAFE" [restaurant services]; "HOT RODS CAFE" (and design) [providing restaurant services; bar services; banquet and social function facilities for special occasions; and hotel reservations for others]	No
12-12	EX	75/364,899	Sharon Bossert	2(d)	Refusal Affirmed as to personalized bracelets; Refusal reversed as to rosaries		"CHERISHED BEADS" [personalized bracelets (Class 14); rosaries (Class 16)]	"CHERISHED" [ladies' diamond finger rings]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-12	EX	75/789,092	Institute for Transformation, LLC	2(e)(1)	Refusal Affirmed		"SELF-AWARENESS SURVEY" [computer software for behavioral assessment and prerecorded CD-ROM disks and prerecorded video tapes in the field of behavioral assessment; tutorials, namely, workbooks and books in the field of behavioral assessment; educational services, namely, providing seminars, workshops, conferences, and instructional meetings related to behavioral assessment; in-training consultation services in the field of be havioral assessment; computer on-line global service, namely, providing a web site featuring instruction in the field of behavioral assessment]		No

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Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-14	EX	75/734,838	Network Resources, Inc.	2(d)	Refusal Affirmed as to both cited registrations		"NRI NETWORK RESOURCES, INC." (and design) [employment placement service, namely, placing temporary and permanent technical support employees in government agencies and large corporations to assist with computer hardware, computer software and computer network projects]	"NRI" [employment agency services]; "NRI STAFFING RESOURCES" (and design) [temporary employment agency services; personnel placement and recruitment services]	No
12-14	EX	75/496,494	Avant Immunotherapeutics, Inc.	2(d)	Refusal Reversed		"AVANT IMMUNOTHERAPEUTICS" [pharmaceuticals for therapeutic and diagnostic use in the treatment of cardiovascular disease, immune disorders, and inflammation; and vaccines and purified proteins for therapeutic and medical diagnostic use]	"AVANTI" [biochemical for laboratory use, namely, phospholipids; and biochemical for pharmaceutical use, namely, phospholipids for use as an additive or concipient in pharmaceuticals]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
12-14	OPP	114,298	Morton International, Inc. v. Asahi Denka Kogyo Kabushiki Kaisha	2(d); res judicata (collateral estoppel/issue preclusion)	Opposition Sustained (on basis of collateral estoppel)	"ADVASTAB" [stabilizers for vinyl resins]	"ADKSTAB" [anti-oxidants, absorbing agents, stabilizers, nucleating agents, metal deactivators and lubricants used in connection with making plastics]		No
12-14	EX	75/681,947	Laboratoire Rene Guinot	2(d)	Refusal Affirmed		"SKIN PEACE" [a full line of skin care, body care, hair care, nail care, color cosmetics and shaving care preparations]	"PEACE" [potpourri, perfume bath oil, body oil, non-medicated bath salts, sachets, scented skin soaps, and scented toilet soaps]	No
12-14	EX	75/567,010	Agdata, Inc.	2(d)	Refusal Reversed		"MEDDATA" [providing an on-line database in the field of managed health care insurance coverage, namely, providing on-line referrals and data (Continued)	"MEDDATA" [*among other services*: providing personal and medical information to medical professionals in emergency situations]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
							management services for use by office administrative staff for submitting referrals on-line to specialists and insurance providers in compliance with the referral and authorization rules and regulations of the insurance companies' managed care plans; providing an on-line database in the field of managed health care insurance coverage, namely, providing insurance plan information including on-line eligibility verification for insurance plans, deriving historical reports, obtaining feedback on patients' care, and Medicare and Medicaid referral tracking]		

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Some correspondence may only be submitted via the Office's electronic filing system (EFS). For example, the following publication requests must be submitted via EFS:

a request for publication of an application as amended during examination (37 CFR 1.215(c));

a request for redacted publication (37 CFR 1.217(b));

a request for voluntary publication of an application filed before November 29, 2000 (37 CFR 1.221(a)); or

a request for republication of an application that has already been published (37 CFR 1.221(a)).

Instructions on how to file such a publication request via EFS are located on the Office's Electronic Business Center on the Office's Internet Web site http://www.uspto.gov <http://www.uspto.gov> under the Electronic Business Center section.

Please address mail to be delivered by the United States Postal Service (USPS) as follows:

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Commissioner for Patents
Washington, D.C. 20231

Please address mail to be delivered by other delivery services (Federal Express (Fed Ex), UPS, DHL, Laser, Action, Purolator, etc.) as follows:

U.S. Patent and Trademark Office
2011 South Clark Place
Customer Window, Box _____
Crystal Plaza Two, Lobby, Room 1B03
Arlington, Virginia 22202

Box Designations	Explanation
Box REISSUE	All new and continuing Reissue application filings.
Box 12	Contributions to the Examiner Education Program.
Box 313(b)	Petitions under 37 CFR 1.313(c) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for a continuing application or a request for continued examination (RCE).
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box CPA	Requests for Continued Prosecution Applications (CPA's) under 37 CFR 1.53(d).
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications which do not request expedited examination under 37 CFR 1.155.
Box Expedited Design	Only to be used for the initial filing of design applications accompanied by a request for expedited examination under 37 CFR 1.155. (Design applicants seeking expedited examination may alternatively file a design application and corresponding request under 37 CFR 1.155 by hand-delivering the application papers and request directly to the Design Group Director's office.)
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection.)
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PGPUB	Correspondence regarding publication of patent applications not otherwise provided.
Box PGPUB - ABD	Petitions under 37 CFR 1.138 to expressly abandon an application to avoid publication of the application.
Box PGPUB DRAWINGS	Drawings to be included in a patent application publication (replacement drawings for drawings included with a patent application on filing).
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box RCE	Requests for continued examination under 37 CFR 1.114.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or application number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
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Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation* and disciplinary proceedings; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Mail related to refund requests.
Box 17	Invoices directed to the Office of Finance.
Box 24	Mail for the Office of Independent Inventor Programs.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Correspondence	Correspondence related to maintenance fees other than payments of maintenance fees in patents. Payments of maintenance fees in patents not submitted electronically over the Internet at www.uspto.gov should be mailed to: United States Patent and Trademark Office P.O. Box 371611 Pittsburgh, PA 15250-1611
Box OED	Mail for the Office of Enrollment and Discipline.
Deposit Account Replenishments	To send payment to replenish deposit accounts Commissioner of Patents and Trademarks P.O. Box 70541 Chicago, IL 60673
Refund Requests	To send refund requests Commissioner of Patents and Trademarks Box 16 Washington, D.C. 20231

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Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

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Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI^3) at the Sunnyvale Public Library in Sunnyvale, California.

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	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z. J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(480) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	(860) 543-8628
	New Haven Free Public Library	(203) 946-8130
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
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	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 242-6541
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(225) 388-8875
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
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	Boston Public Library	(617) 536-5400 Ext. 265
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	Big Rapids: Abigail S. Timme Library, Ferris State University	(231) 591-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
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	Reno: University of Nevada, Reno Library	(775) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(973) 733-7779
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	New York Public Library (The Research Libraries)	(212) 592-7000
	Stony Brook: Engineering Library, State University of New York	(631) 632-7148
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-2935
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6971
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-3022
	Dayton: Paul Laurence Dunbar Library, Wright State University	(937) 775-3521
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburg, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-6369
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 2022
	Bayamon, Learning Resources Center, University of Puerto Rico	(787) 786-5225
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(864) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-1275
Tennessee	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(979) 845-5745
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 348-5483
	Lubbock: Texas Tech University	(806) 742-2282
	San Antonio Public Library	(210) 207-2500
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	(802) 656-2542
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-4695 Ext. 5113
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Cheyenne: Wyoming State Library	(307) 777-7281

PATENT TECHNOLOGY CENTERS

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NICHOLAS P. GODICI, Commissioner for Patents
ESTHER M. KEPPLINGER, Deputy Commissioner for Patent Operations
STEPHEN G. KUNIN, Deputy Commissioner for Patent Examination Policy
EDWARD R. KAZENSKE, Deputy Commissioner for Patent Resources and Planning

TECHNOLOGY CENTERS		DIRECTORS	Telephone & FAX Numbers Area Code 703	New Case Date*
1600	**BIOTECHNOLOGY, ORGANIC**			
1610	Organic chemistry, bio-affecting and body treating composition	John J. Doll	308-1123 FAX 308-2742	08/29/00
1620	Carbohydrates, Nonhetrocyclic Chemistry and Uses	Bruce Kisliuk	306-2928 FAX 308-2742	03/20/00
1630	Recombinant molecular and microbiology, multicellular organisms	John J. Doll	308-1123 FAX 308-2742	08/03/00
1640	Immunology and Plants	Bruce Kisliuk	306-2928 FAX 308-2742	05/04/00
1650	Non-recombinant molecular and microbiology, non-immuno proteins and peptides	Bruce Kisliuk	306-2928 FAX 308-2742	08/04/00
1660	Asexually Reproduced Plants	John J. Doll	308-1123 FAX 308-2742	11/13/00
1700	**CHEMICAL, MATERIALS ENGINEERING**			
1710	Synthetic resins	Jacqueline M. Stone	308-1495 FAX 305-3599	02/14/00
1720	Fluid separation and agitation, metal foundry, welding, plastic molding apparatus, fuels and related compositions	Richard V. Fisher	308-1193 FAX 305-3599	08/07/00
1730	Glass and paper making, tobacco, non-metallic molding, adhesive bonding, tires and coating apparatus	Richard V. Fisher	308-1193 FAX 305-3599	02/15/00
1740	Metallurgy, electrochemistry, cleaning, disinfecting, sterilizing, analytical chemistry and wave energy	Richard V. Fisher	308-1193 FAX 305-3599	10/20/99
1750	Chemical products and processes, solar cells and sputtering apparatuses	Richard V. Fisher	308-1193 FAX 305-3599	05/04/00
1760	Food technology, petroleum processing, coating and etching	Jacqueline M. Stone	308-1495 FAX 305-3599	04/20/00
1770	Stock materials and miscellaneous articles	Jacqueline M. Stone	308-1495 FAX 305-3599	12/23/99
2100	**COMPUTER ARCHITECTURE, SOFTWARE, ELECTRONIC COMMERCE**			
2120	Miscellaneous computer applications	Allen MacDonald	305-9700 FAX 308-5355	01/06/99
2130	Cryptography, security	Margaret A. Focarino	306-5484 FAX 305-3719	02/02/99
2150	Computer networks	Allen MacDonald	305-9700 FAX 308-5355	09/16/98
2160	Electronic commerce	John J. Love	306-5484 FAX 305-3719	04/29/99
2170	Graphical user interface, data bases	Margaret A. Focarino	306-5484 FAX 305-3719	04/16/99
2180	Computer architecture	Stewart Levy	308-2100 FAX 308-5355	04/08/99
2600	**COMMUNICATIONS**			
2610	Television	Joseph J. Rolla	305-9700 FAX 308-5401	12/31/97
2620	Image analysis, fax	Joseph J. Rolla	305-9700 FAX 308-54011	10/16/98
2630	Digital, optical, and general communications	Jin F. Ng	305-4800 FAX 308-5401	10/13/98

TECHNOLOGY CENTERS		DIRECTORS	Telephone & FAX Numbers Area Code 703	New Case Date*
2640	Audio, speech processing and wired telephone	James L. Dwyer	305-4800 FAX 308-5401	05/28/98
2650	Dynamic information stroage and retrieval	James L. Dwyer	305-4800 FAX 308-5401	06/30/99
2660	Mutiplex communication	Jin F. Ng	305-4800 FAX 308-5401	06/30/00
2670	Computer graphics and display systems	Jin F. Ng	305-4800 FAX 308-5401	05/20/99
2680	Radio Telecommunications	James L. Dwyer	305-4800 FAX 308-5401	05/06/99
2800	**SEMICONDUCTORS, ELECTRICAL AND OPTICAL SYSTEMS AND COMPONENTS**			
2810	Static memory and digital logic	Rolf G. Hille	308-0658 FAX 305-1341	02/09/00
2820	Semiconductors and electrical circuits	Rolf G. Hille	308-0658 FAX 305-1341	05/31/00
2830/ 2840	Power generation and distribution, music, electrical components and control circuits	Richard Seidel	306-3431 FAX 308-7725	12/15/99
2850/ 2860	Photocopying, recorders, measuring and testing, printing	Howard Goldberg	306-3431 FAX 308-7725	11/08/99
2870/ 2880	Liquid crystals, optical elements, optical systems, fiber optics, lasers, electric lamps, registers, optics measuring and radiant energy	Janice A. Falcone	308-0530 FAX 308-7725	07/23/99
3600	**TRANSPORTATION, CONSTRUCTION, AGRICULTURE, LICENSING AND REVIEW**			
3610	Surface transportation	Gerald Goldberg	308-1134 FAX 305-7687	10/31/00
3620	Closures, connections, hardware, sign exhibiting and furniture	Al Lawrence Smith	308-1020 FAX 305-7687	07/24/00
3630	Static structures, supports and furniture	Al Lawrence Smith	308-1020 FAX 305-7687	07/25/00
3640	Aeronautics, agriculture, plant and animal husbandry, weaponry, nuclear systems, license and review	Gerald Goldberg	308-1134 FAX 305-7687	08/24/00
3650	Material handling	Gerald Goldberg	308-1134 FAX 305-7687	08/11/00
3660	Computerized vehicle controls and navigation, radio wave and acoustic wave communication	Gerald Goldberg	308-1134 FAX 305-7687	09/20/00
3670	Wells, earth boring/moving/working, excavating, mining harvesters, bridges, roads, petroleum	Al Lawrence Smith	306-1020 FAX 305-7687	09/18/00
3680	Machine elements and power transmissions	Al Lawrence Smith	308-1020 FAX 305-7687	09/06/00
3700/ 2900	**MECHANICAL ENGINEERING, MANUFACTURING AND PRODUCTS, DESIGNS**			
3710	Amusement and education devices	Ethel Rollins-Cross	308-1078 FAX 305-3579	02/07/00
3720	Packages and containers, manufacturing devices and processes, machine tools and hand tools	Ethel Rollins-Cross	308-1078 FAX 305-3579	01/14/00
3730	Medical instruments, diagnostic equipment, treatment devices, surgery and surgical supplies	John E. Kittle	308-0873 FAX 305-3591	08/21/00
3740	Thermal and combustion technology, motive and fluid power systems	Richard Bertsch	308-0975 FAX 308-4741	07/28/00
3750	Fluid handling and dispensing, textile manufacturing and apparel	Richard Bertsch	308-0975 FAX 308-4741	04/04/01
3760	Body treatment, kinestherapy, and exercising	John E. Kittle	308-0873 FAX 305-3591	09/20/00
2900	Designs	John E. Kittle	308-0873 FAX 305-3590	01/04/00

* A communication from the examiner should have been received in most applications filed prior to this date.

TRADEMARK OPERATION

Nicholas P. Godici, Acting Director of the United States Patent and Trademark Office
Ann Chasser, Commissioner for Trademarks
Condition of Trademark Applications as of December 1, 2001

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Jerry Price, Managing Attorney, (703) 308-9101—North Tower, 10th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/25/01	02/02/01
Law Office 102—Thomas Shaw, Managing Attorney, (703) 308-9102—South Tower, 5th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/12/01	08/07/01
Law Office 103—Michael Hamilton, Managing Attorney, (703) 308-9103—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/17/01	08/16/01
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—South Tower, 6th Floor, Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/30/01	05/29/01
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—South Tower, 3rd Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/28/01	03/28/01
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—North Tower, 6th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/13/01	06/20/01
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—North Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/17/01	09/07/01
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—South Tower, 8th Floor, Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/01	05/17/01
Law Office 109—Ronald Sussman, Managing Attorney, (703) 308-9109—South Tower, 8th Floor, Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/01	08/04/01
Law Office 110—Christopher A. F. Pedersen, Managing Attorney, (703) 308-9110—South Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/24/01	10/01/01
Law Office 111—Craig Taylor, Managing Attorney, (703) 308-9111—North Tower, 10th Floor, Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/23/01	08/06/01
Law Office 112—Janice O'Lear, Managing Attorney, (703) 308-9112—South Tower, 5th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/12/01	07/23/01
Law Office 113—Odette Bonnet, Managing Attorney, (703) 308-9113—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/21/01	10/29/01
Law Office 114—Margaret Le, Managing Attorney, (703) 308-9114—South Tower, 6th Floor, Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/15/01	08/15/01
Law Office 115—Tomas Vlcek, Managing Attorney, (703) 308-9115—North Tower, 3rd Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/28/01	03/09/01

**Collective Marks—Class 200
**Certification Marks—Classes A & B

Office of Trademark Services—Ronald Williams, Director, (703) 305-1222 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Robin Lewis, Manager, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—(703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	11/14/01	—0—
Renewals (All Classes)	09/21/01	—0—
Section 12(c) Publications (All Classes)	10/16/01	—0—

1. ** Assigned to all Law Offices

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305-8747 through (703) 305-9752 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

JANUARY 22, 2002

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

US 5,494,515 C1 (4523rd)

METHOD AND APPARATUS FOR USING BLAST-FURNACE SLAG IN CEMENT CLINKER PRODUCTION

Rom D. Young, Dallas, Tex., assignor to Texas Industries, Inc., Dallas, Tex.

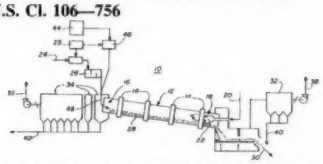
Reexamination Request No. 90/005,825 Sep. 29, 2000.

Reexamination Certificate for Patent 5,494,515, issued Feb. 27, 1996, Appl. No. 404,902, Mar. 15, 1995.

This patent is subject to a terminal disclaimer.

Int. Cl. C04B *7/36*

U.S. Cl. 106—756



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

1. A method of cement clinker manufacture using an elongated rotary cement kiln having a feed-end and a heat-end, the heat-end being tilted downwardly with respect to the feed-end, the method comprising the steps of:

directing heat from a heat source into said heat-end of the kiln;

introducing a stream of feedstock material containing limestone into said feed-end of the kiln such that the stream of feedstock material moves toward said heat at the heat-end of the kiln;

crushing and screening air-cooled blast-furnace slag to obtain particles with a predominant size of up to a maximum diameter of substantially 2"; and

adding an amount of said crushed and screened air-cooled blast-furnace slag to said stream of feedstock material at said feed-end end of the kiln, such that as the stream of feedstock material and blast-furnace slag moves toward said heat-end, end, the blast-furnace slag is melted by said heat and diffused into the feedstock material to form cement clinkers.

REISSUES

JANUARY 22, 2002

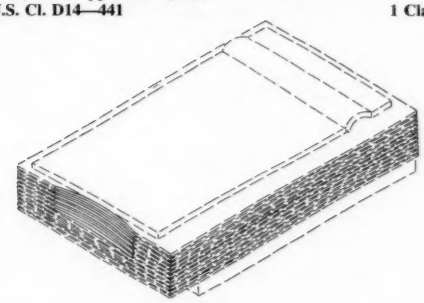
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

US RE37,517 E
PORTION OF AN OPTICAL SCANNER

Modest Khovaylo, Fort Collns, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Original No. 8,336,078, dated Jun. 1, 1993, Appl. No. 07/697,478, filed on May 8, 1991. Application for reissue May 31, 1995, Appl. No. 39,810.

U.S. Cl. D14—441 **1 Claim**



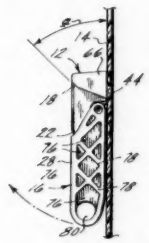
US RE37,518 E
LIGHTWEIGHT HANDLE

James S. Hardigg, Conway, and Rene R. Aponte, Chicopee, both of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Original No. 5,461,755, dated Oct. 31, 1995, Appl. No. 08/155,806, filed on Nov. 23, 1993. Application for reissue Oct. 31, 1997, Appl. No. 962,111.

Int. Cl. B65D *25/28*

U.S. Cl. 16—438 **11 Claims**



10. A handle assembly disposed on a container wall for lifting and transporting said container, the handle assembly comprising:

a stationary bracket member affixed to the container wall, said bracket member having inner and outer portions;

a movable handle member comprising a hand grip portion and first and second arms extending from said hand grip portion, each of said first and second arms including an outer portion and a pivot portion substantially parallel to said hand grip portion, each of said pivot portions being rotatable within said inner portion of said stationary bracket member so that said movable handle member may be pivoted between a first position and a second position;

first and second stationary stop members located to be contacted by first and second movable stop members disposed on the outer portion of said first and second arms of said movable handle;

each of said stationary stop members and movable stop members having a substantially planar contact surface which come into contact when said movable handle is pivoted from its first position to its second position so as to limit said pivotal movement of said movable handle;

said planar contact surfaces of said movable handle and said stationary stop members being disposed at an angle of about 45 degrees with respect to the container wall when in contact with one another whereby said movable handle is positioned such that said arms thereof are at an angle of approximately 90 degrees with respect to said container wall.

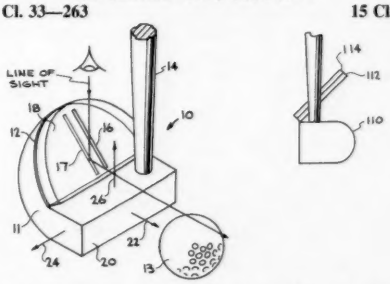
US RE37,519 E
GOLF CLUB WITH OPTICAL ALIGNMENT SYSTEM

John Ashley Densberger, 5456 Delia Way, Livermore, Calif. 94550, and Derek Edward Decker, 835 Discovery Bay Blvd., Discovery Bay, Calif. 94561

Original No. 5,640,777, dated Jun. 24, 1997, Appl. No. 08/489,546, filed on Jun. 12, 1995. Application for reissue Jun. 23, 1999, Appl. No. 338,684.

Int. Cl. A63B *53/04;* **G01C** *15/00*

U.S. Cl. 33—263 **15 Claims**



18. A device for aligning a face of a golf club head in a desired direction, said device comprising:

a sighting alignment system including a reflective surface, said sighting alignment system coupled to a top portion of said golf club head;

means for momentarily blocking said sighting alignment system, comprising a mechanical shutter; and

a parallax correction system, positioned apart from said sighting alignment system and defining a plane where parallax has been eliminated; and

said reflective surface having a surface normal located in said plane.

US RE37,520 E
GRAY CAST IRON SYSTEM FOR SCROLL MACHINES

Warren G. Williamson, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Original No. 5,759,298, dated Jun. 2, 1998, Appl. No. 08/708,792, filed on Sep. 9, 1996. Continuation of application No. 08/403,455, filed on Mar. 14, 1995, now Pat. No. 5,580,401. Application for reissue Jun. 1, 2000, Appl. No. 585,153.

Int. Cl. C22C *37/00*

U.S. Cl. 148—321 **103 Claims**

80. A gray cast iron scroll for use in a scroll machine, comprising:

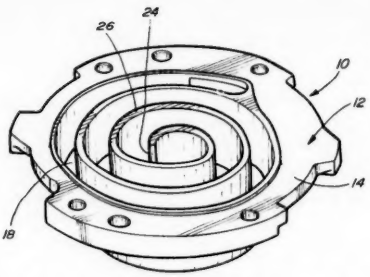
a) a base portion; and

b) a vane portion adjoining said base portion; said base portion and said vane portion being composed of a material comprising:

i) carbon;

ii) silicon;

iii) manganese;



iv) a high performance inoculant including strontium present in an amount of about 3 to about 100 ppm;

v) the balance iron;

said base portion and said vane portion having a microstructure of type A graphite, a pearlite matrix, and regions that are substantially free of steadite that can be resolved optically at 400 times magnification in an etched state throughout substantially their entire structure;

said base portion and said vane portion being capable of exhibiting said microstructure substantially throughout said scroll; and

wherein said high performance inoculant is effective to promote the formation of the type A graphite and pearlite matrix.

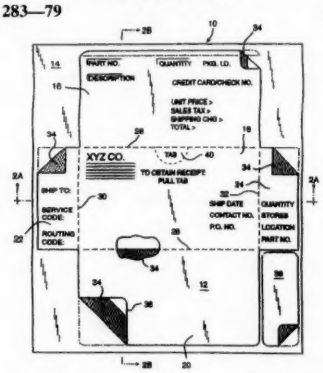
US RE37,521 E
MULTIPURPOSE TUCK LABEL/FORM

David F. Laurash, Bellbrook, Ohio, and George T. Taylor, Bellevue, Wash., assignors to The Standard Register Company, Dayton, Ohio

Original No. 5,413,383, dated May 9, 1995, Appl. No. 08/118,149, filed on Sep. 8, 1993. Application for reissue Nov. 8, 1996, Appl. No. 744,432.

Int. Cl. B42D *15/00*

U.S. Cl. 283—79 **26 Claims**



1. A multipurpose tuck label/form in combination with an article comprising:

an article, and

a tuck label/form secured to a surface of said article, said label/form comprising a label ply having first and second sides, said label ply including an upper panel, a center panel, a lower panel, and a pair of side panels; said upper and center panels being connected along a transverse perforated fold line, along which fold line said second side of said upper panel is folded to be in contact with said second side of said center panel, said center panel being connected to said lower panel and to respective side panels along generally transverse and vertical liens of perforation, said side panels including an adhesive on the respective second sides thereof securing said label to said article.

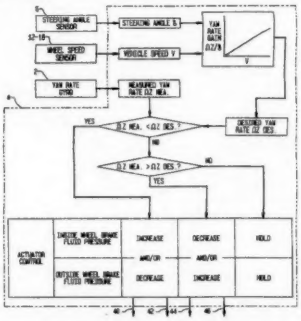
US RE37,522 E
BRAKE CONTROLLING SYSTEM

Dean C. Karnopp, and Yoshiyuki Yasui, both of Davis, Calif., assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Original No. 4,898,431, dated Feb. 6, 1990, Appl. No. 07/206,735, filed on Jun. 15, 1988. Application for reissue Aug. 27, 1999, Appl. No. 385,001.

Int. Cl. B60T *8/60;8/58*

U.S. Cl. 303—146 **34 Claims**



1. An apparatus for controlling a vehicle *having a plurality of wheels and a brake pedal,* comprising:

means responsive to the influence of destabilizing forces on a vehicle for measuring an actual yaw rate of said vehicle;

means for determining a dynamically variable target yaw rate of said vehicle and for producing an output signal in response to a comparison of said target yaw rate and said actual yaw rate; and

brake controlling means, responsive to said output signal, for maintaining stability of the vehicle when said vehicle is in motion *to control a braking force applied to at least one of said plurality of wheels in the absence of brake pedal input, said brake controlling means including brake fluid pressure modulator means which responds to said output signal to modulate a braking force applied to at least one wheel on one side of said vehicle differently relative to a braking force applied to at least one wheel on an opposite side of said vehicle.*

US RE37,523 E
EYEGLASSES HAVING INTERCHANGEABLE LENSES AND ATTACHMENT CLIPS

Pierre N. Bondet, 6, Rue Anatole France, 01100 Oyonnax, France

Original No. 5,602,603, dated Feb. 11, 1997, Appl. No. 08/578,888, filed on Dec. 22, 1995. Application for reissue Feb. 10, 1999, Appl. No. 248,237.

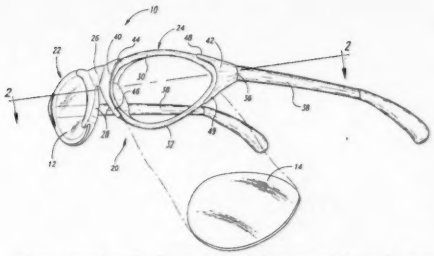
Int. Cl. G02C *7/10;9/00;1/08;1/04*

U.S. Cl. 351—41 **38 Claims**

23. Eyeglasses, comprising:

a pair of eyeglass lenses;

a frame having a pair of frame sections and a bridge interconnecting the frame sections, each frame section including upper and lower frame members extending from the bridge to respective attachment areas, each frame section further including an outer attachment clip and an inner attachment clip, the inner attachment clip extending from the bridge toward the attachment areas, the inner attachment clip having at least one leg member that extends along the upper or lower



frame member, the leg member being spaced from the upper or lower frame member to form a slot between the leg member and the upper or lower frame member to receive a respective one of the lenses therebetween; and

a securing device attached to the attachment areas of the frame sections to retain the frame on the face of a wearer.

US RE37,524 E

DEVICE FOR DRIVING A SEMICONDUCTOR LASER BY A PLURALITY OF DRIVING ELEMENTS

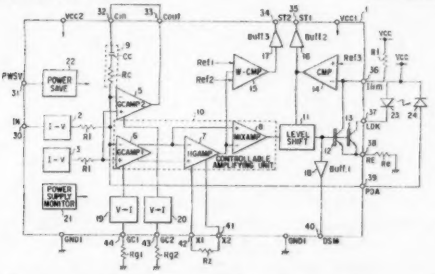
Toyoki Taguchi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Original No. 5,694,409, dated Dec. 2, 1997, Appl. No. 08/712,835, filed on Sep. 12, 1996. Continuation-in-part of application No. 08/465,413, filed on Jun. 5, 1995, now Pat. No. 5,579,329. Application for reissue Dec. 1, 1999, Appl. No. 452,769.

Claims priority, application Japan, Jul. 15, 1994, 6-162580

Int. Cl. H01S *3/10*

U.S. Cl. 372—29.011 **23 Claims**



12. A semiconductor laser control device for supplying a high-frequency superimposed drive current to a semiconductor laser, comprising:

a control circuit which receives a control signal and processes the control signal to obtain a signal output corresponding to an amount of emission light from semiconductor laser;

a high-frequency signal generating circuit which generates a high-frequency signal for reducing noise caused by light returning to the semiconductor laser; and

an addition unit which adds the high-frequency signal to the signal output from the control circuit,

wherein the control circuit, the high-frequency signal generating circuit, and the addition unit are integrally fabricated on one chip.

US RE37,525 E

METHOD FOR TREATING INFECTIOUS RESPIRATORY DISEASES

Gregory A. Prince, Potomac, and Val G. Hemming, Gaithersburg, both of Md., assignors to Henry M. Jackson Foundation, Rockville, Md.

Original No. 5,290,540, dated Mar. 1, 1994, Appl. No. 07/877,095, filed on May 1, 1992. Continuation-in-part of application No. 07/694,079, filed on May 1, 1991, now abandoned. Application for reissue Feb. 28, 1996, Appl. No. 608,313.

Int. Cl. A61K *9/12*

U.S. Cl. 424—45 **5 Claims**

17. A method of treating *infectious* pneumonia *and infectious bronchiolitis* in a human *host,* susceptible to or suffering from pneumonia *or bronchiolitis* caused by respiratory syncytial virus or parainfluenza virus type 3, comprising *concurrently* administering **[**directly**]** into the lower respiratory tract of the **[**human**]** *host* an anti-inflammatory agent selected from a corticosteroid, indomethacin, ibuprofen, and acetylsalicylic acid at a dosage of from 0.1 μg to 1000 mg/kg body weight of the host to reduce inflammation and **[**an**]** *a* human immunoglobulin G at a dosage of from 0.1 μg to 100 mg/kg body weight of the host to reduce the concentration of the respiratory syncytial virus or parainfluenza virus type 3, the anti-inflammatory agent and the anti-infectious agent being administered in the form of a small particle aerosol having a size less than 10 microns.

US RE37,526 E

PROCESS FOR MAKING HIGH DENIER FILAMENTS OF THERMOTROPIC LIQUID CRYSTALLINE POLYMERS AND COMPOSITIONS THEREOF

John Anthony Flint, Berkeley Heights; Michael Jaffe, Maplewood, both of N.J.; M. Ishaq Haider, Mooresville, N.C.; Joseph J. DiBiase, Nazareth, Pa., and John Edward Cornetta, Missouri City, Tex., assignors to Celanese Acetate LLC, Charlotte, N.C.

Original No. 5,945,216, dated Aug. 31, 1999, Appl. No. 09/150,853, filed on Sep. 10, 1998. Application for reissue Oct. 8, 1999, Appl. No. 416,199.

Int. Cl. B32B *9/00*

U.S. Cl. 428—364 **47 Claims**

1. A process for forming an as-spun filament of a thermotropic liquid crystalline polymer having the following properties:

(i) denier of at least about 50 denier per filament;

(ii) tenacity of at least about 8 grams per denier;

(iii) modulus of at least about 450 grams per denier; and ,

(iv) elongation of at least about 2 percent;

said process comprising the steps of:

(a) heating a thermotropic liquid crystalline polymer to a temperature of at least about 15° C. above its melting transition to form a fluid stream of said thermotropic polymer;

(b) passing said stream through a heated extrusion chamber, wherein said chamber is disposed with a suitable cylindrical orifice to form the filament of said polymer, and wherein said cylindrical orifice has an aspect ratio of length to diameter (L/D) greater than about 1 and less than about 15; and

(c) winding said filament at a take-up speed of at least about 200 meters per minute and draw-down (DD) ratio of at least about 4; and with the proviso that when L/D is between 0 to 2, the DD is at least 4 so as to form the filament of essentially uniform molecular orientation across its cross-section and having a denier of at least about 50 denier per filament.

38. An as-spun filament of a thermotropic liquid crystalline polymer having the following properties:

(a) denier of at least about 50 denier per filament;

(b) tenacity of at least about 8 grams per denier;

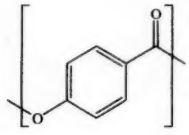
(c) modulus of at least about 450 grams per denier; and

(d) elongation of at least about 2 percent.

39. The filament as set forth in claim **38**, wherein said thermotropic liquid crystalline polymer is selected from the group consisting of:

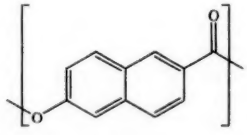
(i) a melt processable wholly aromatic polyester capable of forming an anisotropic melt phase at a temperature below approximately 350° C. consisting essentially of the recurring moieties I and II wherein:

I is



and

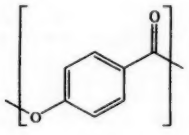
II is



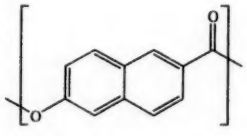
wherein said polyester comprises about 10 to about 90 mole percent of moiety I, and about 10 to about 90 mole percent of moiety II;

(ii) a melt processable wholly aromatic polyester capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of the recurring moieties I, II, III, and VII wherein:

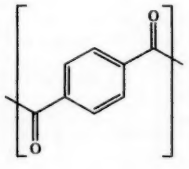
I is



II is

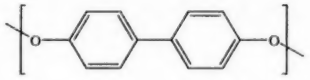


III is



and

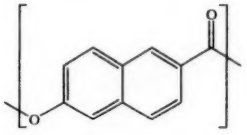
VII is



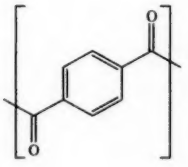
wherein said polyester comprises about 40 to about 70 mole percent of moiety I, about 1 to about 20 mole percent of moiety II, and about 14.5 to about 30 mole percent each of moieties III and VII;

(iii) a melt processable wholly aromatic polyesteramide capable of forming an anisotropic melt phase at a temperature below approximately 360° C. consisting essentially of the recurring moieties II, **[**I,**]** *III* and VI wherein:

II is

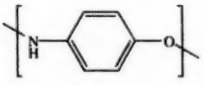


[I**]** *III*



and

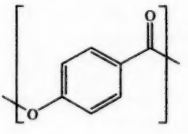
VI is



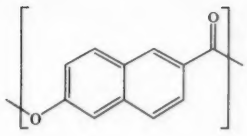
wherein said polyesteramide comprises about 40 to about 70 mole percent of moiety **[**I,**]** *II and* about 15 to about 30 mole percent each of moieties **[**II,**]** *III* and **[**III**]** *VI*;

(iv) a melt processable wholly aromatic polyesteramide capable of forming an anisotropic melt phase at a temperature below approximately 380° C. consisting essentially of the recurring moieties I, II, III, VII and VI wherein:

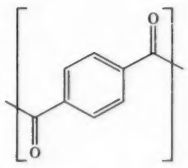
I is



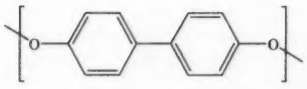
II is



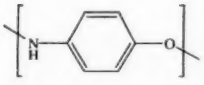
III is



VII is



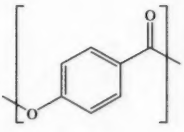
and
VI is



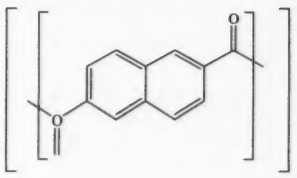
wherein said polyesteramide comprises about 40 to about 70 mole percent of moiety I, about 1 to about 20 mole percent of moiety II, about 14.5 to about 30 mole percent of moiety III, about 7 to about 27.5 mole percent of moiety VII, and about 2.5 to about 7.5 mole percent of moiety VI; and

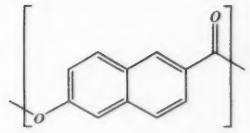
(v) a melt processable wholly aromatic polyesteramide capable of forming an anisotropic melt phase at a temperature below approximately 350° C. consisting essentially of the recurring moieties I, II, III, IV, V, and VI wherein:

I is

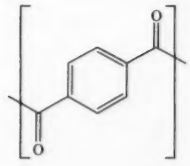


II is

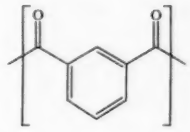




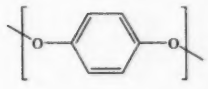
III is



IV is



V is



and
VI is

wherein said polyesteramide comprises about 40 to about 70 mole percent of moiety I, about 10 to about 20 mole percent of moiety II, about 2.5 to about 20 mole percent of moiety III, about 0 to about 3 mole percent of moiety IV, about 12.5 to about 27.5 mole percent of moiety V and about 2.5 to about 7.5 mole percent of moiety VI.

US RE37,527 E

HEAT-RESISTANT RUBBER COMPOSITION

Takashi Hakuta; Tetsuo Tojo; Masaaki Kawasaki, and Mikio Hosoya, all of Ichihara, Japan, assignors to Mitsu Chemicals, Tokyo, Japan

PCT No. PCT/JP96/00991, § 371 Date Dec. 10, 1996, § 102(e) Date Dec. 10, 1996, PCT Pub. No. WO96/32442, PCT Pub. Date Oct. 17, 1996

Original No. 5,733,983, dated Mar. 31, 1998, Appl. No. 08/750,821, filed on Dec. 10, 1996. This PCT application Apr. 11, 1996, Appl. No. 538,790.

Claims priority, application Japan, Apr. 11, 1995, 7-085815; Apr. 11, 1995, 7-085816

Int. Cl. C08F *8/00*

U.S. Cl. 525—343 **33 Claims**

1. A heat-resistant rubber composition comprising:

an ethylene-α-olefin-nonconjugated polyene copolymer rubber (A) composed of ethylene, an α-olefin of 3 to 20 carbon atoms and a nonconjugated polyene, and

an organic peroxide (B); and having vulcanizable properties,

said ethylene-α-olefin-nonconjugated polyene copolymer rubber (A) having the following properties:

(1) a molar ratio of ethylene to the α-olefin of 3 to 20 carbon atoms is in the range of **[**40/60**]** *55/45* to **[**95/5**]** *85/15* (ethylene/α-olefin),

(2) the nonconjugated polyene is 5-vinyl-2-norbornene, 5-isopropenyl-2-norbornene or 5-isobutenyl-2-norbornene,

(3) the nonconjugated polyene content is in the range of 0.5 to 50 g/100 g in terms of iodine value, and

(4) an intrinsic viscosity (η), as measured in decahydronaphthalene at 135° C., of 0.1 to 10 dl/g.

US RE37,528 E

DIRECT-DRIVE MANIPULATOR FOR PEN-BASED FORCE DISPLAY

Blake Hannaford, Seattle, Wash., and Pietro Buttolo, Dearborn, Mich., assignors to Immersion Corporation, San Jose, Calif.

Original No. 5,642,469, dated Jun. 24, 1997, Appl. No. 08/334,621, filed on Nov. 3, 1994. Application for reissue Jun. 30, 1998, Appl. No. 110,370.

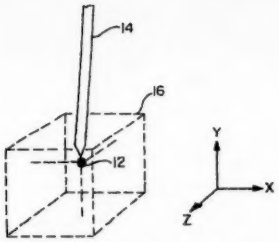
Int. Cl. G05B *15/00*

U.S. Cl. 700—264 **29 Claims**

1. A direct drive actuator system responsive to operator manipulation of a control point, comprising:

an end effector defining a control point accessible to manipulation by an operator within an end effector workspace;

first, second and third kinematic chains coupled in parallel to the end effector in common alignment to the control point to define a redundant actuator structure for allowing motion of the control point within a first plane of the workspace to not more than two degrees of freedom;



the first kinematic chain comprising: a first actuator, a first inner link and a first outer link, the first actuator fixed relative to the first plane and coupled to the first inner link, the first inner link coupled to the first outer link to define a first joint, the first outer link coupled to the end effector in alignment with the control point;

the second kinematic chain comprising: a second actuator, a second inner link and a second outer link, the second actuator fixed relative to the first plane and coupled to the second inner link, the second inner link coupled to the second outer link to define a second joint, the second outer link coupled to the end effector in alignment with the control point; and

the third kinematic chain comprising: a third actuator, a third inner link and a third outer link, the third actuator fixed relative to the first plane and coupled to the third inner link, the third inner link coupled to the third outer link to define a third joint, the third outer link coupled to the end effector in alignment with the control point.

15. A force feedback interface device for providing low inertia, low backlash, low friction force feedback, comprising:

a reference surface;

an end effector defining a control point for engagement by a user, wherein said control point is translatable in two degrees of freedom with respect to said reference surface;

a first chain coupled between said reference surface and said end effector, said first chain including a first direct drive flat-coil actuator, a first inner link coupled to said first direct drive flat-coil actuator, and a first outer link coupled between said first inner link and said end effector; and

a second chain coupled between said reference surface and said end effector, said second chain including a second direct drive actuator, a second inner link coupled to said second direct drive actuator, and a second outer link coupled between said second inner link and said end effector,

wherein said first chain and said second chain provide parallel couplings between said reference surface and said control point, said first chain and said second chain providing not more than said two degrees of freedom to said control point.

PLANT PATENTS

GRANTED JANUARY 22, 2002

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

US PP12,360 P2

MINIATURE ROSE PLANT NAMED 'TUCKTOMMY'

Robert T. Tucker, 9404 Hunting Hills Dr., Franklin, Tenn. 37607

Filed Jan. 5, 2000, Appl. No. 477,639

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—118 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, upright habit, substantially as illustrated and described, characterized by buds and flowers of garden form, essentially medium yellow in color, with reverse same, and further characterized by a plant of bushy shape, vigorous, with the main stems and shoots being moderately thorny, the said plant being easy to propagate from cuttings, with an abundance of flowers borne singly or several to a stem.

US PP12,361 P2

TARO CULTIVAR NAMED 'PA'LEHUA'

Eduardo E. Trujillo, Honolulu, Hi., assignor to University of Hawaii, Honolulu, Hi.

Filed Oct. 22, 1999, Appl. No. 425,785

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—258 **1 Claim**

1. A new and distinct variety of taro plant, substantially as illustrated and described herein, that is characterized by resistance to taro leaf blight caused by *Phytophthora colocasiae*, tolerance to root rot caused by Pythium spp., vigorous growth, large mother corm size, and purple corm of very good poi and eating qualities.

US PP12,362 P2

GERANIUM PLANT NAMED 'FISROROSE'

Angelika Utecht, Montabaur, Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Aug. 3, 2000, Appl. No. 632,244

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—328 **1 Claim**

1. A new and distinct cultivar of geranium plant named 'Fisrorose', as described and illustrated.

US PP12,363 P2

GERANIUM PLANT NAMED 'FISOM'

Angelika Utecht, Montabaur, Germany, assignor to FlorFis AG, Binningen, Switzerland

Filed Jan. 31, 2001, Appl. No. 772,846

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—329 **1 Claim**

1. A new and distinct cultivar of geranium plant named 'Fisom' as described and illustrated.

US PP12,364 P2

GERANIUM PLANT NAMED 'FISSIL'

Angelika Utecht, Montabaur, Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Aug. 3, 2000, Appl. No. 631,665

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—329 **1 Claim**

1. A new and distinct cultivar of geranium plant named 'Fissil', as described and illustrated.

US PP12,365 P2

GERANIUM PLANT NAMED 'FISROCKY ORANGE'

Angelika Utecht, Montabaur, Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Aug. 3, 2000, Appl. No. 631,660

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—327 **1 Claim**

1. A new and distinct cultivar of geranium plant named 'Fisrocky Orange', as described and illustrated.

US PP12,366 P2

GERANIUM PLANT NAMED 'FISBELLA'

Angelika Utecht, Montabaur, Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Aug. 3, 2000, Appl. No. 631,664

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—332 **1 Claim**

1. A new and distinct cultivar of geranium plant named 'Fisbella', as described and illustrated.

US PP12,367 P2

GERANIUM PLANT NAMED 'FISBAROCK'

Angelika Utecht, Montabaur, Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Aug. 3, 2000, Appl. No. 631,663

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—332 **1 Claim**

1. A new and distinct cultivar of geranium plant named 'Fisbarock', as described and illustrated.

US PP12,368 P2

GERANIUM PLANT NAMED 'FISPURPLE'

Angelika Utecht, Montabaur, Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Aug. 3, 2000, Appl. No. 631,974

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—329 **1 Claim**

1. A new and distinct cultivar of geranium plant named 'Fispurple', as described and illustrated.

US PP12,369 P2

NEW GUINEA IMPATIENS PLANT NAMED 'TAMAR PURPLE'

Anita Jorna, Maasland, Netherlands, assignor to Fides Goldstock Breeding B.V., Maasland, Netherlands

Filed Nov. 15, 2000, Appl. No. 712,370
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—318 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named 'Tamar Purple', as illustrated and described.

US PP12,370 P2

NEW GUINEA IMPATIENS PLANT NAMED 'TAMAR WHITE'

Anita Jorna, Maasland, Netherlands, assignor to Fides Goldstock Breeding B.V., Maasland, Netherlands

Filed Nov. 15, 2000, Appl. No. 712,349
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—318 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens plant named 'Tamar White', as illustrated and described.

US PP12,371 P2

KALANCHOE PLANT NAMED 'FOREVER MIDI SUNSET PINK'

Lyndon W. Drewlow, Santa Barbara County, Calif., assignor to Oglevee, Ltd., Connellsville, Pa.

Filed May 11, 2000, Appl. No. 571,298
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—339 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named 'Forever Midi Sunset Pink', as illustrated and described.

US PP12,372 P2

NEW GUINEA IMPATIENS PLANT NAMED 'TAMAR TRUE PINK'

Anita Jorna, Maasland, Netherlands, assignor to Fides Goldstock Breeding B.V., Maasland, Netherlands

Filed Nov. 15, 2000, Appl. No. 712,316
Int. Cl. A01H *5/00*
U.S. Cl. Plt.—318 **1 Claim**

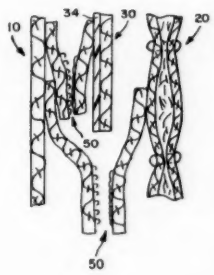
1. A new and distinct cutlivar of New Guinea Impatiens plant named 'Tamar True Pink', as illustrated and described.

PATENTS

GRANTED JANUARY 22, 2002

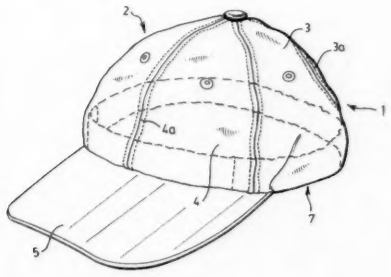
GENERAL AND MECHANICAL

US 6,339,843 B1
PROTECTIVE GARMENT ADAPTED TO BE SELECTIVELY CONFIGURED
William L. Grilliot, and Mary I. Grilliot, both of Dayton, Ohio, assignors to Morning Pride Manufacturing, L.L.C., Dayton, Ohio
Filed Jan. 29, 2001, Appl. No. 772,040
Int. Cl. A41D *13/00*
U.S. Cl. 2—97 **4 Claims**



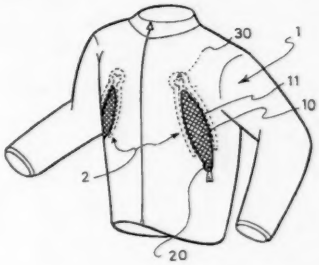
3. A protective garment comprising an outer shell, which provides abrasion resistance, puncture resistance, or both, a thermal liner, and a separate liner, which includes a moisture barrier, each said liner being attached to and within the outer shell by means permitting said same liner to be detached from the outer shell while permitting but not requiring the other liner to be detached from the outer shell, so that the garment is selectively configured, with one said liner so attached, or with both said liners so attached.

US 6,339,844 B1
PEAKED CAP
Murray Roy Merkley, 134 Inglewood Dr., Toronto, Ontario, Canada
Filed Mar. 1, 2001, Appl. No. 795,138
Int. Cl. A42B *1/00*
U.S. Cl. 2—195.3 **6 Claims**



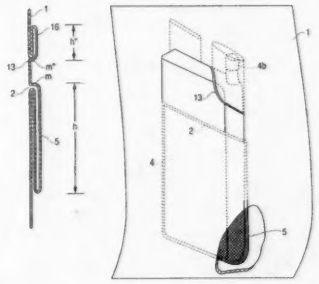
1. A baseball type hat comprising a main body portion formed by a plurality of pie shaped panels secured to one another and a front bill secured to said main body portion, said main body portion having a lower edge provided with a head band, said head band comprising a plurality of band sections including fixed length front and back sections and elastic side sections, said side sections comprising about half the length of said band.

US 6,339,845 B1
WEARING APPAREL WITH VENTING APPARATUS
Jason Burns, Brookfield, Mass., and Susan Poersch, Boulder, Colo., assignors to Salomon S.A., Metz-Tessy, France
Filed Nov. 20, 1998, Appl. No. 196,223
Int. Cl. A41D *27/28*
U.S. Cl. 2—243.1 **29 Claims**



1. A venting arrangement for apparel comprising a vent, a fastening device associated to said vent for closing/opening said vent, wherein an opening expander is associated to said vent or to said fastening device to open said vent automatically in response to opening of said fastening device, said vent comprising an opening generally contained within a general plane of said apparel and having an orientation generally concurrent with an orientation of said fastening device.

US 6,339,846 B2
POCKET FOR PORTABLE TELEPHONE IN CLOTHES
Shizumaru Uchida, Hiroshima-ken, Japan, assignor to Big Born Shoji Co., Ltd., Hiroshima, Japan
Division of application No. 09/400,439, filed on Sep. 21, 1999. This application Jul. 31, 2001, Appl. No. 917,622.
Claims priority, application Japan, Nov. 5, 1998, 10-08718; Nov. 9, 1998, 10-08818; Mar. 12, 1999, 11-01464
Int. Cl. A41D *27/20*
U.S. Cl. 2—247 **15 Claims**



1. A pocket for a portable telephone with an antenna in clothes made of cloth having opposite sides, said pocket comprising:

a first opening in said cloth, said first opening having a width, and a right end and a left end;

a bottom bag made of stretchy material, said bottom bag having a depth that is shallow in comparison to the telephone, said bottom bag having an entrance portion defining a bag opening, said entrance portion of said bottom bag being secured to said cloth around said first opening in said cloth to be suspended along one of the sides of the cloth;

at least one second opening in said cloth, said at least one second opening being spaced from at least one of the right end and the left end of said first opening; and

an antenna covering bag for covering the telephone antenna, said antenna covering bag having an entrance portion defining a bag opening, the entrance portion of the antenna covering bag being secured to said cloth around said second opening to stay along the same side of the cloth as the bottom bag.

US 6,339,847 B1

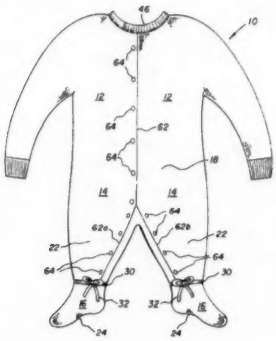
ONE PIECE GARMENT WITH BOOT PORTIONS OF ADJUSTABLE SIZE

Charlene C. Hanks, 3132 Holland Dr., Orlando, Fla. 32825

Filed Nov. 5, 1999, Appl. No. 435,231

Int. Cl. A41D *27/10*

U.S. Cl. 2—269 **1 Claim**



1. A garment consisting of:

a pants portion having a waist region and two pant legs, each of said pant legs comprising a leg connected end joined to said waist region and a leg free end having an end wall which closes said leg free end, such that said waist region and said two pant legs are unified as a single piece garment;

and pant tying means for each of legs extending circumferentially around each pant leg for contracting the pant leg around and against a wearer leg contained within the pant leg to grip the wearer leg, said pant leg tying means being separate from the pant leg for relative movement toward and away from said leg free end prior to contracting the pant leg to define a garment boot portion at the leg free end matching the size of the foot and substantially limiting relative movement of the foot within the leg free end.

US 6,339,848 B1

BELT SLEEVE SYSTEM AND METHOD

Malinda L. Mayhood, 2937 Wood Crest Dr., Sarasota, Fla. 34239, and Whitney C. Huffman, 5102 - 19th Ct., E., Bradenton, Fla. 34203

Filed May 19, 2000, Appl. No. 574,958

Int. Cl. A41F *9/00*

U.S. Cl. 2—338 **20 Claims**

13. A flexible sleeve system for diversifying the functionality of an underlying garment belt, said sleeve system comprising:

a garment belt having a buckle with a tongue, a non-buckle end, a front surface, at least one hole near to said non-buckle end, a plurality of spaced-apart transverse slots, and a minimum of one of said transverse slots being positioned generally near to said non-buckle end for optimum belt closure during use;

a plurality of elongated pieces of material having a buckle end and a distal end, a portion of said pieces of material also having minimum length and width dimensions sufficient to completely cover said front surface of said belt and designated as exposed front members, and a separate portion of said pieces of material designated as hidden back members;

at least one reinforced aperture formed through each of said exposed front members, each of said reinforced apertures being adapted for insertion therethrough of said tongue;

a plurality of quickly releasable two-part fasteners each having a first part and a second part, at least one of said second parts being attached to each of said exposed front members between said buckle end and said reinforced aperture, and each of said first parts being located at a spaced-apart distance from said reinforced aperture in an opposed position relative to said reinforced aperture from said first fastener part;

each of said exposed front members being connected to one of said hidden back members which defines a sleeve with a pocket of sufficient dimension for containing said non-buckle end of said belt;

a transverse opening formed in each said sleeve so as to communicate with said pocket; each said transverse opening having a minimum length dimension slightly larger than the width dimension of said belt;

at least one opening formed in said distal end of each of said exposed front members and each of said hidden back members, each of said openings being adapted for facilitating alignment of said tongue with one of said transverse slots in said non-buckle end of said belt; and

attachment means for securing each of said first parts and said second parts of said two-part fasteners in place so that once the elongated material defining a sleeve is successively secured over said belt after being anchored with said tongue and the pocket, whereby the sleeve rapidly and interchangeably effect the appearance of the belt without interfering with the routine closure and use of the belt.

US 6,339,849 B1

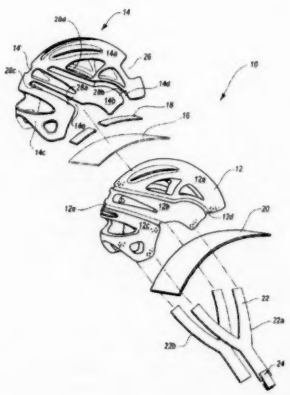
SOCCER HELMET

Keith J. Nelson, 1417 Sumac Dr., Logan, Utah 84321, and Ronald A. Carter, 827 N. 900 East, Bountiful, Utah 84054

Filed May 13, 1999, Appl. No. 311,538

Int. Cl. A42B *3/00*

U.S. Cl. 2—425 **13 Claims**



1. A soccer helmet comprising:

a generally dome-shaped padding layer having inside and outside surfaces and having a substantially uniform thickness over the forehead region of the human head; and

a generally dome-shaped shell layer having inside and outside surfaces, wherein the inside surface of the shell layer is attached to the outside surface of the padding layer, wherein the padding layer and shell layer terminate over the ear so as to leave the ear exposed, wherein the shell layer comprises:

a major portion for covering a forehead and crown of the human head;

a first minor portion for covering a rearward portion of the human head, wherein the major portion is flexibly coupled to the minor portion; and

a second minor portion for covering an intermediate portion of the human head between the crown and the rearward portion of the human head, wherein the second minor portion is flexibly coupled to the first minor portion and to the major portion,

wherein the first and second minor portions of the generally dome-shaped shell layer define holes, wherein the padding layer defined corresponding holes such that ambient air contacts the human head through the holes when the soccer helmet is worn on the human head.

US 6,339,850 B1

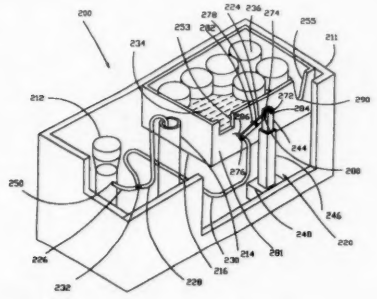
TOILET INCLUDING AN APPARATUS SUPPLYING DETERGENT TO THE WATER TANK

David Roman Gore, 7373 E. Iowa Ave, #1095, Denver, Colo. 80231

Filed Oct. 5, 1998, Appl. No. 166,713

Int. Cl. E03D *9/03*

U.S. Cl. 4—227.2 **12 Claims**



1. A toilet including an apparatus for flushing water from a water storage tank to a toilet bowl and automatically supplying detergent to the water storage tank comprising in combination: a source of water, a valve for regulating the flow of water from said source to said tank, a vessel in said tank, a supply of solid detergent and a detergent solution in said vessel, a water supply means for selectively delivering water to said vessel during a portion of the time water is flowing into said tank to react with said solid detergent to form detergent solution, and a detergent supply means, and wherein said water supply means and said detergent supply means are responsive to the water level in said tank such that when the water level in the tank is lowered as when the apparatus is flushed, said water supply means delivers water to said vessel during a portion of the time water is flowing into said tank and said detergent supply means deliver said solution from said vessel to said tank.

US 6,339,851 B1

TOILET SEAT

Håkan Bergkvist, Bromma, Sweden, assignor to Baby Björn AB, Danderyd, Sweden

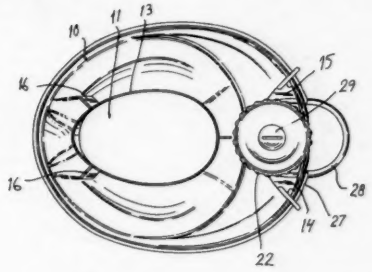
PCT No. PCT/SE99/00266, § 371 Date Oct. 11, 2000, § 102(e) Date Oct. 11, 2000, PCT Pub. No. WO99/53818, PCT Pub. Date Oct. 28, 1999

PCT Filed Feb. 25, 1999, Appl. No. 646,912

Claims priority, application Sweden, Apr. 23, 1998, 9801436

Int. Cl. A47K *13/02*

U.S. Cl. 4—239 **20 Claims**



1. A toilet seat comprising a seat ring and means for positioning the seat ring relative to a toilet bowl, said positioning means including at least one pair of interconnected arms which are movably mounted on the seat ring and adjustable synchronously to positions in which they engage the toilet bowl, said arms being designed for engagement with mutually opposite inner surfaces or outer surfaces of the toilet bowl and interconnected so as to move synchronously in mutually opposite directions as they are brought to their positional settings, said arms being pivotal about a vertical pivot shaft located in a symmetry plane through said toilet seat.

US 6,339,852 B1

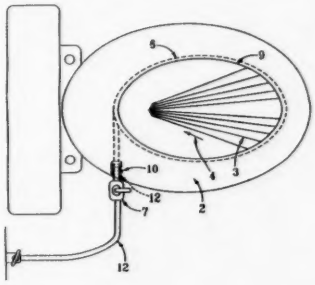
BIDET TOILET SEAT

Sung F. Huang, 4694 Portofino Cir., Cypress, Calif. 90630

Filed Oct. 13, 2000, Appl. No. 689,923

Int. Cl. A47K *3/26;* **E03D** *9/08*

U.S. Cl. 4—420.4 **15 Claims**



1. A bidet toilet seat comprising:

a toilet seat having an arcuate frontal portion, a central opening, and a rear portion pivotally connected with a toilet bowl,

conduit means having a plurality of spaced-apart nozzle holes disposed on an inner rim of said arcuate frontal portion of the seat,

respective nozzle holes having respective orientations to direct respective water streams in a generally converging pattern extending (a) generally horizontally, (b) upwardly to a limited degree to impinge upon the region of a person's genitalia when seated on the toilet seat, and

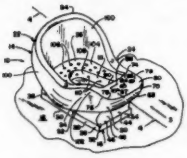
a water source connected with said conduit means.

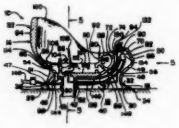
US 6,339,853 B1

COMBINATION HYDROTHERMAL BATH AND BIDET

Mauricio C. Apostolo, 11377 SW. 84th La., Miami, Fla. 33173

Provisional application No. 60/173,267, filed on Dec. 28, 1999.
This application Dec. 15, 2000, Appl. No. 737,497.
Int. Cl. A47K *3/22*; E03C *1/20*
U.S. Cl. 4—444 51 Claims





1. A combination hydrothermal bath and bidet, comprising a body having:

a) a base portion for resting on a floor;

b) a front portion extending upwardly from said base portion thereof;

c) a back portion extending upwardly from said base portion thereof for leaning against by the back of a user when said combination hydrothermal bath and bidet is utilized as a hydrothermal bath;

d) a pair of side portions extending upwardly from said base portion thereof and forwardly from said back portion thereof to said front portion thereof for straddling by the legs of the user; and

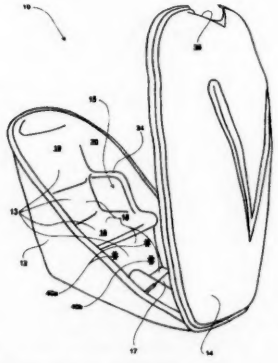
e) a horizontal seat portion for supporting the buttocks of the user in a sitting position when said combination hydrothermal bath and bidet is utilized as said hydrothermal bath, and being bordered by said base portion thereof, said front portion thereof, said back portion thereof, and said pair of side portions thereof, wherein the seat portion comprises a plurality of bidet water ejecting throughbores.

US 6,339,854 B1

STEAM CABINET AND METHOD OF MANUFACTURE

Darcy S. Amendt, Edmonton, Canada, assignor to SPA Logic Inc., Thorsby, Canada

Filed Sep. 21, 2000, Appl. No. 666,082
Int. Cl. A61H *33/06*
U.S. Cl. 4—524 9 Claims



1. A personal steam cabinet comprising:

a) a base tub having a first periphery about a cavity:

b) a liner tub forming a steam enclosure and having a generally W-shaped, body-contoured inside lounge portion defining a foot area, a seat area, a back area and side walls, the lounge portion fitted with one or more U-shaped steam conduits, each having a outlet and an inlet communicating with the enclosure, the liner tub being insertable into the cavity in the base tub and having a second periphery which mates and seals to the base tub's first periphery when so inserted so as to form a base assembly having a foot and a head;

c) means for inducing flow through each U-shaped steam conduit to recirculate steam in the enclosure;

d) a steam supply conduit extending from the base tub and to the lounge portion for conducting and discharging steam into the enclosure; and

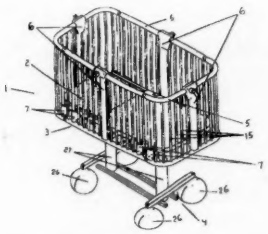
e) a closable lid having a third periphery which mates with the second periphery when the lid is closed and substantially sealing the enclosure, the lid having a foot and a head adjacent the foot and head of the base assembly respectively, the lid's head having a cutout for permitting passage of a user's head.

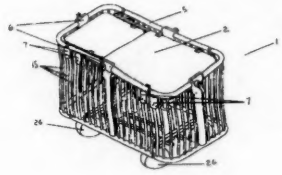
US 6,339,855 B1

CRIB OR BED WITH FULLY ACCESSIBLE PATIENT SURFACE AND SIDE RAIL POSITIONING MECHANISM THEREFOR

Greg Socha, Kalamazoo, Mich.; Doug Maynard, and Eric Nord, both of Jacksonville, Fla., assignors to Pedicraft, Inc., Jacksonville, Fla.

Filed Sep. 28, 1999, Appl. No. 406,768
Int. Cl. A47D *7/02*
U.S. Cl. 5—93.1 29 Claims





1. An apparatus comprising:

a frame;

a bed surface supported by said frame and having a periphery;

at least one side rail movably connected to said frame along said periphery of said bed surface for enclosing said bed surface, each of said at least one side rail having a top portion; and

at least one side rail positioning mechanism, each of said at least one positioning mechanism being coupled to a respective one of said at least one side rail, each of said at least one positioning mechanism being operable to position said respective one of said at least one side rail in an uppermost position whereat said top portion of said respective one of said at least one side rail is above said bed surface, and in a lowermost position whereat said top portion of said respective one of said at least one side rail is substantially at or below said bed surface;

wherein each of said at least one side rail is movably connected to said frame such that when every one of said at least one side rail is simultaneously in said lowermost position, a plane including said bed surface is free of impediments thereby allowing unimpeded access to a patient on said bed surface about an entirety of said periphery of said bed surface.

US 6,339,856 B1

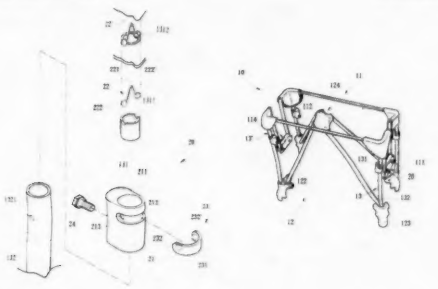
PLAYYARD WITH HEIGHT ADJUSTABLE FEATURE

Er-Jui Chen, Feng-Shan; Pao-Shan Huang, Tai Pao, and Huang-Yi Cheng, Chia-I Hsien, all of Taiwan, assignors to Link Treasure Limited, Tortola, Bouvet Island

Filed Dec. 4, 1999, Appl. No. 455,743

Int. Cl. A47D *7/00*

U.S. Cl. 5—99.1 **3 Claims**



1. A collapsible playyard having a frame capable of being in an extended position and a collapsed position, the frame comprising:

an upper frame member comprising a plurality of side rails;

a lower frame member comprising a plurality of diagonal rails;

a plurality of vertically extending rails, each comprising a support tube and a sliding tube slidable in the support tube; and

a plurality of locking devices;

wherein:

two adjacent side rails and a top end of the vertically extending rails are joined together by a first bracket, and each end of the diagonal rail is attached to a bottom end of one of the vertically extending rails by a second bracket; and

each of the locking devices comprises a third bracket mounted on one of the support tubes and two engaging members provided in a corresponding sliding tube, the third bracket and the engaging members cooperate to releasably lock the support tube and the sliding tube in the extended position and the collapsed position, respectively;

further wherein the engaging member comprises a biased V-shaped resilient member having two raised ends, the raised ends are structured to respectively penetrate through two apertures of the sliding tube, two holes of the bracket, and two holes of the support tube by an exapansion of the biased V-shaped resilient member to engage the sliding tube with the support tube at either an extended or a collapsed position.

US 6,339,857 B1

SPRING ARRANGEMENT FOR MATTRESSES

Barry Clayton, Rossendale, United Kingdom, assignor to Siddall and Hilton Limited of Central United Kingdom

Filed Mar. 29, 2000, Appl. No. 537,838

Claims priority, application United Kingdom, Mar. 30, 1999, 9907183

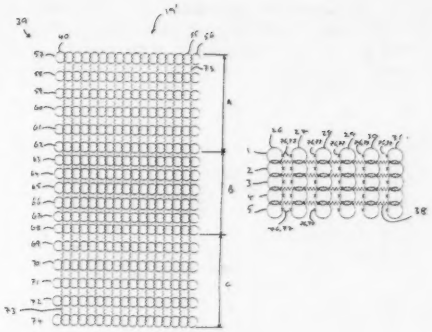
Int. Cl. A47C *27/07*

U.S. Cl. 5—716 **17 Claims**

1. A spring arrangement for a mattress comprising:

an array of springs, wherein the springs are double conical springs (**75**) with each coil spring (**75**) being knotted (**76**, **77**) at its opposite ends on one side or is unknotted at its opposite ends on one side and has a tendency when subject to load to bend over at another side (B), and

wherein a plurality of rows of said springs (**75**) are provided spaced apart in a head-to-toe arrangement (**39**) in which the springs (**75**) are disposed in adjacent rows (**40**–**56**) with the coil springs (**57**–**72** and **74**) in each row (**40**–**56**) being spaced apart along the length of the arrangement (**39**), and wherein interconnecting or lacing wires (**73**) interconnect the springs



in a row (even number reference numerals) along the length of the arrangement, and also interconnect the springs in the adjacent row (odd numbered reference numerals) to form rows (**40**–**56**) of interconnected spaced springs and with the coils of the adjacent similar rows (odd and even numbers) being juxtaposed, and in which the spacing of the springs (**57**–**72** and **74**) in each of the head-to-toe rows (**40**–**56**) is closer in at least a central region (B) where greater support or firmer support is required, and in which a plurality of pairs (**57**, **58**, **59**, **60** etc.) of the springs in each row (**40**–**56**) of interconnected spaced apart springs are arranged so that the knotted (**76**, **77**) or said unknotted sides in each said plurality of pairs of springs (**57**, **58**; **59**, **60** etc.) are juxtaposed or so that said one sides to which there is a tendency to bend over are oppositely disposed in said pairs or otherwise oriented to act to counteract each other.

US 6,339,858 B1

HAMMER WITH HOLDER

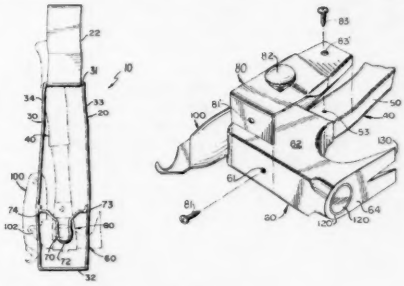
Juan Carlos Fraga, and Roberto Riera, both of North Fort Mayer, Fla., assignors to Juan C. Fraga, North Fort Myers, Fla.

Continuation of application No. 09/483,590, filed on Jan. 14, 2000, now Pat. No. 6,192,539. This application Dec. 22, 2000, Appl. No. 747,546.

This patent is subject to a terminal disclaimer.

Int. Cl. B25D *1/04*

U.S. Cl. 7—144 **4 Claims**



1. A hammer tool, comprising:

A) a handle means having a longitudinal axis, a grip end and a head end;

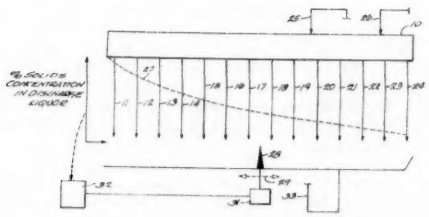
B) a head assembly mounted to said head end and said head assembly further including first and second ends, and at least one side; and said first end including a face;

C) a headed pin assembly mounted to said side and said headed pin assembly further including a headed pin member; and

D) a holder for keeping said handle means in suspension, said holder including an elongated wire frame having hook means

mounted thereon to receive said headed pin member, and said holder further including a loop for receiving a user's belt so that said means, when supported by said holder, is kept at a cooperative and convenient position for a user to readily grab said handle means.

US 6,339,859 B1
CONTROL SYSTEM FOR A FILTRATE SPLITTING DEVICE
Lewis D. Shackford, 8 Riverside Dr., Merrimack, N.H. 03054, and John E. Leddy, 25 Juniper Dr., Amherst, N.H. 03031
Filed Jun. 25, 1999, Appl. No. 344,996
Int. Cl. D06B *3/02*
U.S. Cl. 8—156 **23 Claims**



16. A method of regulating fluid flow discharged from at least one of a displacement zone and extraction zone of an apparatus for washing pulp, the method comprising the following steps:

providing at least one group of discharge conduits for discharging filtrate and/or wash liquor from the zone, the group of discharge conduits for discharging filtrate and/or wash liquor having varying solids concentrations, the group of discharge conduits including a first discharge conduit for discharging primarily filtrate at a high flowrate and a high solids concentration and a last discharge conduit for discharging primarily clean wash liquor at a low flowrate and a low solids concentration and at least one discharge conduit disposed between the first and last discharge conduits for discharging filtrate and/or wash liquor at flowrates and solids concentrations that are less than the flowrate and solids concentration of the first discharge conduit and greater than the flowrate and solids concentration of the last discharge conduit,

providing a movable splitter valve that can direct fluid flow from the zone to one or more of the discharge conduits,

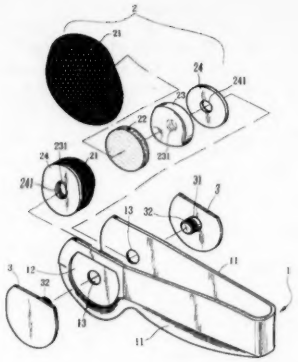
measuring a physical property for the fluid being discharged from the one or more of the discharge conduits and generating a measured value for one or more discharge conduits,

comparing the measured value with an acceptable value range for the one or more discharge conduits,

in the event the measured value for the one or more discharge conduits falls outside the acceptable value range for the one or more of the discharge conduits, moving the valve body to redirect the flow of fluid to a different discharge conduit combination.

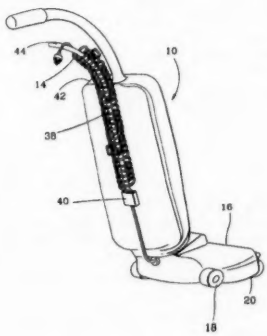
US 6,339,860 B1
GLASSES WIPER STRUCTURE
Chung-Yang M. Chen, 3F, No. 2, Lane 497, Chung-Cheng Rd., Hsintien City, Taipei County, Taiwan
Filed Jun. 7, 2000, Appl. No. 588,717
Int. Cl. G02C *13/00*
U.S. Cl. 15—214 **4 Claims**

1. Glasses wiper structure comprising a clamp body, two wiping units and two fixing members, the clamp body having two clamping arms containing therebetween a certain angle, a free end of each clamping arm being formed with a perforation, each wiping unit including a fabric material, a soft pad, a case seat and a fixing



seat, the case seat being placed on a bottom side of the soft pad, the fabric material wrapping the soft pad and the case seat, the excessive peripheral fabric material being collected between the case seat and the fixing seat, the fixing seat and the case seat being respectively formed with a through hole and a blind hole corresponding to the perforation of the clamping arm, one side of each fixing member being disposed with a projecting post, the projecting post of each fixing member being passed from an outer side to an inner side of the clamping arms through the perforation of the respective clamping arm and the through hole of the fixing seat into the blind hole of the case seat, whereby the wiping units are easily engaged with and fixed at two ends of the clamping arms without outward expanding the clamping arms to enlarge the gap therebetween.

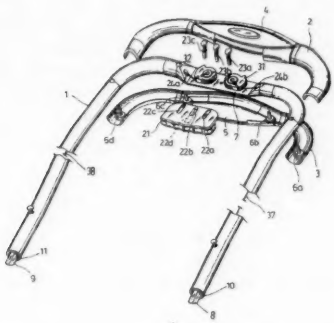
US 6,339,861 B1
VACUUM CLEANER POWER CORD SYSTEM
Vicki L. Snyder, 282 Road #29, Kimball, Nebr. 69145
Filed Jan. 24, 2001, Appl. No. 767,812
Int. Cl. A47L *9/26*
U.S. Cl. 15—323 **8 Claims**



1. In combination with a mobile appliance having an electrical and extendible power cord, a coiled power cord for removably mounting on said appliance, said power cord having shape memory capabilities which allow said power cord to return to its coiled shape from an extended to a retracted state, and a plurality of U-shaped hand gripping members spaced along the length of said power cord; and

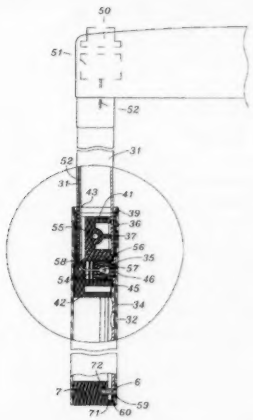
a vertically oriented, elongated rod secured to said appliance, where said rod has an upper end flared away from said appliance, and said rod is of a length for receiving said coiled cord in a fully retracted state.

US 6,339,862 B1
SINGLE-HANDED FOLDING DEVICE (II)
Kenny Cheng, No. 16, Lane 47, Chih Feng St., Taipei, Taiwan
Filed Feb. 9, 2000, Appl. No. 501,022
Int. Cl. B65D *25/28*
U.S. Cl. 16—113.1 **3 Claims**



1. A single-hand folding device comprising a slidable pressing means having racks, drawing cams having teeth on their peripheries, slidable keys and wires with one end fixed to the drawing cams and another end fixed to the slidable keys, wherein as the slidable pressing means is displaced with respect to the drawing cams, the racks of the slidable pressing means drive the drawing cams to rotate and the drawing cams draw the wires to pull the slidable keys.

US 6,339,863 B1
MULTI-STEP POSITIONING DEVICE OF TRUNK PULL ROD
Chung-Hsien Kuo, Taipei Hsien, Taiwan, assignor to Chaw Khong Technology Co., Ltd., Taipei Hsien, Taiwan
Filed Jun. 21, 2000, Appl. No. 598,022
Int. Cl. B25G *1/04;* **A45C** *3/00*
U.S. Cl. 16—113.1 **11 Claims**



1. A multi-sectional pull rod assembly for adjustably supporting a pull handle comprising:

(a) a first rod;

(b) a second rod disposed telescopically in relation to said first rod, said second rod having at least one buckling hole formed therein;

(c) a first rod sleeve disposed between said first and second rods, said first rod sleeve being coupled in locked manner to said second rod and slidably receiving said first rod therethrough;

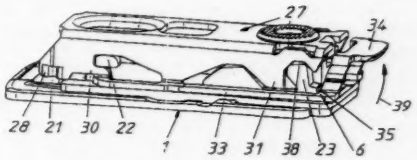
(d) a longitudinally extended porous piece disposed within said second rod, said porous piece having formed therein a plurality of longitudinally spaced holes;

(e) a second rod sleeve coupled in locked manner to said first rod, said second rod sleeve having longitudinally offset first and second end portions, said second end portion maintaining slidable engagement with said porous piece and said second rod, said second end portion having a sliding groove compartment formed therein, said first end portion fixedly engaging a terminal end portion of said first rod;

(f) a laterally displaceable sliding piece received in said sliding groove compartment of said second rod sleeve for displacement between releasing and locking positions, said sliding piece being resiliently biased to said locking position, said sliding piece having protruding therefrom a buckling end for engaging in said locking position one of said porous plate holes; and,

(g) an elongate driving piece coupled to said sliding piece and extending through said first and second rods therefrom.

US 6,339,864 B1
MOUNTING PLATE FOR CABINET HINGES
Markus Albrecht, and Wolfgang Muller, both of Lustenau, Austria, assignors to Grass GmbH, Voralberg, Austria
Filed May 2, 2000, Appl. No. 562,691
Claims priority, application Germany, May 3, 1999, 199 20 137
Int. Cl. E05D *7/10*
U.S. Cl. 16—258 **14 Claims**

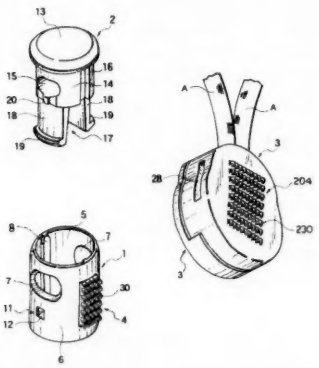


1. Mounting plate for a cabinet hinge, the mounting plate comprising a baseplate adapted for attachment to a cabinet body, and an adjusting plate adapted for attachment to a cabinet hinge, the adjusting plate having a catch fastener and being connectable with the baseplate so that the catch fastener of the adjusting plate is firmly connected to the baseplate, wherein the baseplate comprises two parts, one of said parts being a bottom part adapted to be fastened to a cabinet body and the other of said parts being an upper part that is connected to the bottom part, wherein the adjusting plate is releaseably connectable to the upper part of the baseplate by at least three pairs of linkage points which allow a forced sliding motion between the adjusting plate and upper part, wherein the catch fastener of the adjusting plate further comprises a spring element which establishes a connection between the adjusting plate and the upper part of the baseplate at the at least three pairs of linkage points by the forced sliding motion upon an application of force on the adjusting plate which assures no further movement will take place between the adjusting plate and the upper part of the baseplate, and wherein the bottom part further comprises a safety device that takes the form of a tab on the bottom part, which fits on a corresponding surface of the upper part.

US 6,339,865 B1
CORD FASTENER

Yoshinobu Takahashi, Toyama-ken, Japan, and Kazuhiko Tachibana, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignors to YKK Corporation, Tokyo, Japan

Filed Dec. 15, 1999, Appl. No. 461,889
Claims priority, application Japan, Dec. 28, 1998, 10-372050
Int. Cl. F16G *11/00*
U.S. Cl. 24—136 R **10 Claims**

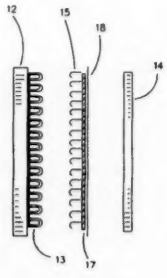


1. A cord fastener made of thermoplastic resin wherein a surface fastener member having a plurality of male engaging elements capable of surface engagement with a companion surface by pressing is disposed, wherein said cord fastener comprises a sliding body having a first cord insertion hole passing to both sides and an elastic mechanism provided at a bottom thereof and a main body engaging with said sliding body and having an escape preventing mechanism for preventing said sliding body from being escaped and a pair of cord insertion holes provided on both sides thereof, wherein the surface fastener member is disposed on an outside face of the main body.

US 6,339,866 B1
METHOD AND APPARATUS FOR A REMOVABLE NAMETAG OR INSIGNIA

Vaughn French, 7959 S. Michigan Ave., Chicago, Ill. 60619

Continuation-in-part of application No. 09/313,040, filed on May 17, 1999, now abandoned. This application Mar. 24, 2000, Appl. No. 535,109.
Int. Cl. A44B *17/00*
U.S. Cl. 24—306 **10 Claims**



1. A removable nametag and shirt combination comprising:

a garment;

a sheetlike receiving member having an outer surface, said receiving member sewed onto said garment at a position for displaying a name or rank, the outer surface of said receiving member having a plurality of loops facing away from said shirt;

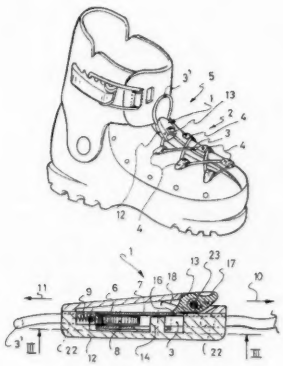
a rigid planar member with first and second sides, said first side containing indicia of name or rank, said second side having an attached layer containing a plurality of hooks;

said planar member being worn on said shirt by pressing the hooks on said second side of said planar member against the loops on said sheetlike receiving member.

US 6,339,867 B1
LACE FASTENER

Guy Azam, Aix-le-Bains, France, assignor to Salomon S.A., Metz-Tessy, France

Filed Aug. 29, 2000, Appl. No. 649,062
Claims priority, application France, Sep. 8, 1999, 99 11396
Int. Cl. A43C *7/08;* **F16G** *11/10*
U.S. Cl. 24—712.5 **9 Claims**



1. A device for fastening a flexible tie, said device comprising:

a hollow body provided with a guiding channel, said channel forming a funnel, a blocking element is positioned for translational movement in the funnel subject to the action of an elastic element, the elastic element pushing the blocking element into the funnel where the tie passes, in view of blocking the latter when it is biased to slide in the same direction as the blocking element, and of enabling it to slide in the opposite direction against the thrust of the elastic element;

the hollow body being housed in a case, the hollow body being translationally displaceable in the case parallel to the blocking element; and

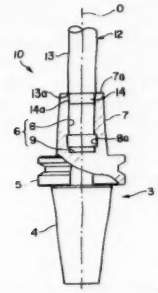
the blocking element being maintained in translation in the case, on one side by means of the elastic element acting directly between it and the case, and on the opposite side by means of an abutment carried by the case, a retractable abutment being provided on the case so as to retain the hollow body under pressure against the blocking element and the interposed tie, in a first position, and to leave the hollow body free in translation with respect to the case and the blocking element, in a second position.

US 6,339,868 B1

CUTTING TOOL AND SHRINK FITTING METHOD FOR THE SAME

Hidehiko Nagaya, and Hiroshi Shimomura, both of Yuuki-gun, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Dec. 8, 1999, Appl. No. 456,548
Claims priority, application Japan, Dec. 10, 1998, 10-351977
Int. Cl. B23P *11/02;* **B23C** *9/00;* **B23B** *5/22*
U.S. Cl. 29—447 **16 Claims**



1. A cutting tool shrink fitting method comprising:

inserting a guide portion which is coaxially connected to a tool main body of a tool into a shrink fitted portion of a hole formed in a tool holding portion;

seating a shoulder portion which connects the tool main body and the guide portion on a surface around the hole of the tool holding portion in order to position the tool with respect to the tool holding portion, the tool main body having an insert portion which is configured to be shrink fitted in the shrink fitted portion of the hole, the insert portion having a tool outer diameter larger than the hole inner diameter (d) of the shrink fitted portion of the hole;

heating the tool holding portion such that the insert portion of the tool main body of the tool is inserted into the shrink fitted portion of the hole; and

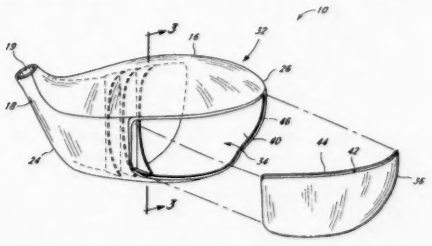
cooling the tool holding portion.

US 6,339,869 B1

METHOD OF MAKING A GOLF CLUB HEAD

Lane Peterson, 810 Baker St. #111, Costa Mesa, Calif. 92626

Division of application No. 08/963,089, filed on Nov. 3, 1997, now Pat. No. 6,162,133. This application Oct. 9, 2000, Appl. No. 685,513.
Int. Cl. B23P *25/00*
U.S. Cl. 29—527.5 **48 Claims**



34. A method of making a golf club head comprising:

forming a generally hollow, unitary, one-piece body including a face plate, a sole plate and a top crown;

providing a side skirt that is attached to the one-piece body; and

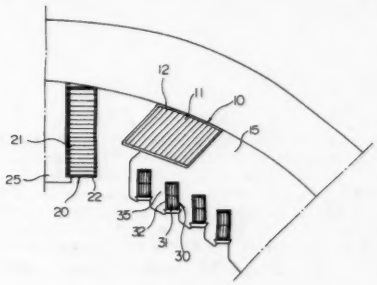
providing an opening in the side skirt that allows access to an interior portion of the one-piece body, the opening having a first edge located proximate the top crown and the opening having a second edge located proximate the sole plate.

US 6,339,870 B1

METHOD OF MANUFACTURING ELECTRICAL WINDINGS

Syoichi Maruyama, Fukushima-ken; Sinichi Yamashiro, Hitachi, and Kenji Mishima, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1993, Appl. No. 735
Claims priority, application Japan, Jan. 9, 1992, 4-002138
Int. Cl. H02K *15/085*
U.S. Cl. 29—596 **5 Claims**



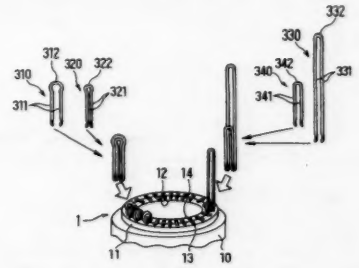
1. A method of manufacturing electrical windings differing in function comprising the step of forming windings by winding conductors, the step of applying insulation on each of said windings, the step of embedding each of the windings covered with the insulating layers in a core, the insulating layers suitable for each of the respective types of windings being formed in said step of applying insulation, the step of impregnating a same resin in to all of the respective windings and a single step of hardening the impregnated same resin in all of the insulated windings to set the windings embedded in a core.

US 6,339,871 B1

METHOD OF MANUFACTURING ROTARY ELECTRIC MACHINE'S STATOR

Kazuki Maesoba, Anjo; Yoshio Naka, Toyota, and Masaru Sugiyama, Okazaki, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Mar. 31, 2000, Appl. No. 538,942
Claims priority, application Japan, Apr. 2, 1999, 11-096513
Int. Cl. H02K *15/00;15/14;15/16*
U.S. Cl. 29—596 **9 Claims**



1. A method of manufacturing a stator of a rotary electric machine including a stator core having a plurality of slots formed in the circumferential direction thereof at equal intervals, said method comprising the steps of:

providing a plurality of U-shaped basic conductor segments having a U-turn portion and a pair of straight portions and a plurality of U-shaped connection conductor segments having a U-turn portion and a pair of straight portions;

forming said U-turn portion and said pair of straight portions of said basic and connection conductor segments into first cross-over portions;

inserting said pair of straight portions of said basic and connection conductor segments into prescribed two of said slots from one end of said stator core to extend from the other end of said stator core;

bending each of said pair of straight portions of said basic and connection conductor segments extending from the other end in directions opposite to each other so that edges of said straight portions extending from said prescribed two of said slots can adjoin each other;

connecting said adjoining edges to form a plurality of second crossover portions and a plurality of coils; and

removing said U-turn portion of said connection conductor segments to respectively form opposite terminals of said coils.

US 6,339,872 B1

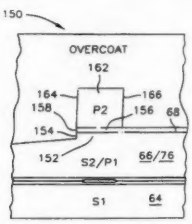
METHOD OF MAKING A MERGED MAGNETIC HEAD THAT INCLUDES A WRITE HEAD WITH SINGLE-SIDED NOTCHED FIRST POLE PIECE

Thomas Young Chang; Edward Hinpong Lee, and Jyh-Shuey Jerry Lo, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of application No. 08/876,451, filed on Jun. 16, 1997, now Pat. No. 6,201,670. This application May 3, 2000, Appl. No. 564,155.

Int. Cl. G11B *5/42*

U.S. Cl. 29—603.14 **20 Claims**



1. A method of making a magnetic head assembly that has an air bearing surface (ABS), comprising:

forming a first pole piece layer;

forming a gap layer on the first pole piece layer;

forming a second pole tip layer on the gap layer with first and second side walls that have a width at the ABS that is greater than a target track width;

milling the first pole piece layer substantially only adjacent the first side wall of the second pole tip layer until the first pole piece layer, the gap layer and the first pole piece layer have contiguous side walls and the second pole tip layer has said target track width.

US 6,339,873 B2

METHOD AND SYSTEM FOR ASSEMBLING INDOOR UNITS OF AIR CONDITIONERS ALONG CONVEYOR LINES

Jae-jin Cha, and Doo-nam Myung, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 19, 1999, Appl. No. 233,052

Claims priority, application Rep. of Korea, Apr. 2, 1998, 98-11692

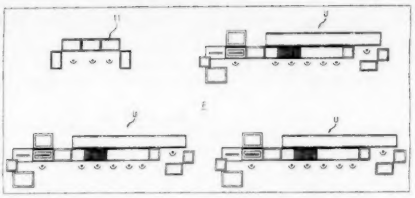
Int. Cl. B23P *21/00*

U.S. Cl. 29—783 **4 Claims**

1. A system for assembling indoor air conditioner units, comprising:

an evaporator assembly section for assembling evaporators by preparing, welding, and testing the evaporators; and

a plurality of unit cells separated from the evaporator assembly section, each having a conveying line, for assembling, testing and packing indoor air conditioning units, and a parts conveying section for conveying parts along and adjacent to the



conveying line; the conveying line including a body assembling section for assembling bodies from the parts conveyed along the parts conveying section, an evaporator fixing section for receiving evaporators assembled at said evaporator assembly section and for fixing the evaporators to respective bodies received from the body assembling section, and a wiring section for wiring a unit comprised of one of the bodies and one of the evaporators attached thereto, the conveying lines being operable independently of one another.

US 6,339,874 B2

ASSEMBLING APPARATUS ASSEMBLING BODY SIDE OF AUTOMOTIVE VEHICLE

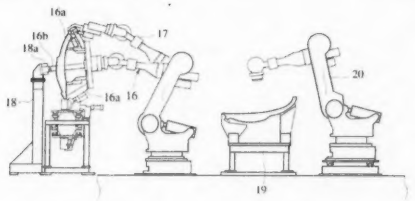
Teruo Segawa; Jyun Matsubara; Kaoru Okuyama; Yukihide Ueda; Shyouichi Takahashi; Setsuo Nakamura; Kazuo Urakami, and Shin Kishita, all of Kanagawa-ken, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa-Ken, Japan

Filed Aug. 28, 1998, Appl. No. 143,370

Claims priority, application Japan, Aug. 28, 1997, 9-232978

Int. Cl. B23P *19/00*

U.S. Cl. 29—824 **3 Claims**



1. An assembling apparatus assembling a body side of an automotive vehicle comprising:

a moving body provided in a transfer line;

a clamp device mounted to the moving body fixing and positioning a body side outer in an upright position wherein the body side outer is fixed in such a manner that a roof rail end of the body side outer is positioned substantially above a side sill end of the body side outer, the body side outer being constructed from a front part and a rear fender part;

an assembling robot disposed in a side of the transfer line, the assembling robot assembling the body side by connecting the body side outer positioned by the clamp device,

a positioning jig disposed in one side of the transfer line advancing toward the front part and the rear fender part positioned on the transfer line, the positioning jig positioning each of the parts from the one side; and

a work set robot disposed in the opposite side of the transfer line to the positioning jig, the work set robot setting inner parts to the front part and the rear fender part,

wherein the clamp device comprises a saw tooth-shaped flange receiver defining a plurality of concave receiving portions provided on the moving body; and

wherein the flange receiver extends in a lateral direction perpendicular to a transfer direction of the transfer line to receive a flange lower end of the rear fender part closer to a rear end of the body side of the automotive vehicle than the side sill end of the body side outer.

US 6,339,875 B1

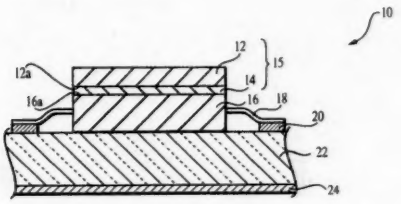
METHOD FOR REMOVING HEAT FROM AN INTEGRATED CIRCUIT

Ralph I. Larson, Bolton, Mass., assignor to Heat Technology, Inc., Sterling, Mass.

Continuation-in-part of application No. 08/834,949, filed on Apr. 7, 1997, Provisional application No. 60/015,001, filed on Apr. 8, 1996. This application Mar. 9, 2000, Appl. No. 521,745.

Int. Cl. H05K *3/30*

U.S. Cl. 29—841 **22 Claims**



1. A method of fabricating a heatsink assembly, comprising:

providing a layer of a core material having opposing first and second surfaces;

forcing an adhesive into the first and second surfaces;

securing the first surface of the core material to an integrated circuit;

securing the second surface of the core material to a heat sink so as to form the heat sink assembly.

US 6,339,876 B1

METHOD FOR ASSEMBLING AN INNER CORE/CYLINDER BLOCK ASSEMBLY FOR LINEAR COMPRESSOR

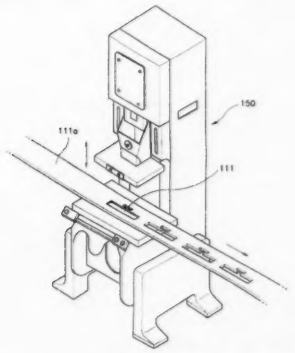
Sung-Jae Lee, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Division of application No. 09/346,889, filed on Jul. 2, 1999, now Pat. No. 6,238,192. This application Jul. 27, 2000, Appl. No. 627,394.

Claims priority, application Rep. of Korea, Jul. 3, 1998, 98-26867

Int. Cl. B23P *15/00*

U.S. Cl. 29—888.02 **7 Claims**



1. A method for manufacturing a linear compressor comprising a cylinder block in which a compressing chamber is formed, and an inner core having a plurality of electric steel plates disposed around the cylinder block, the method comprising the steps of:

punching each of the electric steel plates;

radially stacking the electric steel plates;

welding the electric steel plates to form the inner core;

inserting the inner core into a cast mold for casting the cylinder block; and

pouring molten material into the cast mold and applying pressure to the cast mold so that the molten material is filled into spaces between the electric steel plates, thereby making the inner core integral with the cylinder block.

US 6,339,877 B1

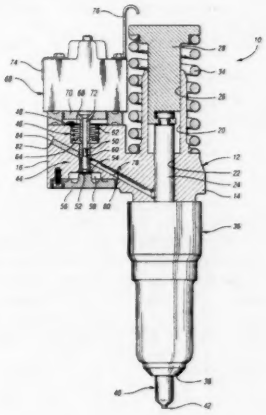
METHOD AND APPARATUS FOR REFURBISHING A VALVE SEAT IN A FUEL INJECTOR ASSEMBLY

Robert D. Straub, Lowell; William M. Galloway, Belmont, and Michael Van Allsburg, Grand Rapids, all of Mich., assignors to Diesel Technology Company, Kentwood, Mich.

Filed Feb. 1, 1999, Appl. No. 245,097

Int. Cl. B23P *15/00*

U.S. Cl. 29—888.42 **10 Claims**



1. A method of refurbishing a valve seat in an associated valve bore in a workpiece, the valve bore having a centerline, the valve seat being disposed at a predetermined angle relative to the centerline of the associated valve bore in the workpiece, a platform with a locator hub supporting the workpiece, the hub having a known reference axis, said method comprising:

locating the workpiece in a predetermined position such that the centerline of the valve bore is aligned with the known reference axis;

moving a tool having a lapping portion corresponding to the valve seat along the known axis such that the lapping portion is brought into engagement with the valve seat;

rotating the tool relative to the workpiece to lap the valve seat; and

moving the tool along the known axis to disengage the lapping portion from the valve seat.

US 6,339,878 B1

METHOD OF REPAIRING AN AIRFOIL

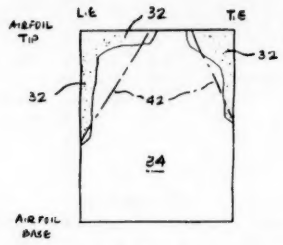
William D. Owen, Manchester, Conn.; Robert Baumgarten, Palm Beach Gardens, Fla.; Eric William Malmborg, Marlborough, Conn.; Christopher Palazzini, Windsor, Conn., and Frank E. Palko, Old Saybrook, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 27, 2000, Appl. No. 536,364

Int. Cl. B23P *15/00*

U.S. Cl. 29—889.1 **12 Claims**

1. A method of repairing an airfoil, comprising the steps of:



determining one or more regions of said airfoil that are likely to be damaged during a period of operation;

creating a stress profile for said airfoil;

selecting a patch line using said stress profile and said determination of said one or more regions likely to be damaged during a period of operation;

providing an airfoil replacement section with a predetermined shape having a bond surface that substantially mates with said patch line;

cutting said airfoil along said patch line to remove a portion of said airfoil;

bonding said airfoil replacement section to said airfoil along said patch line; and

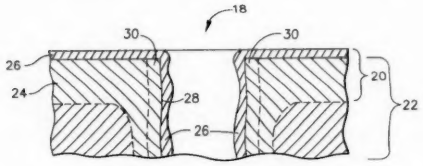
shaping said airfoil.

US 6,339,879 B1

METHOD OF SIZING AND FORMING A COOLING HOLE IN A GAS TURBINE ENGINE COMPONENT

Gary Eugene Wheat, Madisonville; Terri Kay Brown, Central City, and Thomas Phillip Schumacher, Madisonville, all of Ky., assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 29, 2000, Appl. No. 684,987
Int. Cl. B21D *53/78*
U.S. Cl. 29—889.721 **20 Claims**



1. A method of sizing and forming a cooling hole in a gas turbine engine component, the method comprising the steps of:

forming a hole in a surface region of a substrate;

measuring the thickness of any recast surface region surrounding the hole and created during the forming step as a result of the forming step having caused a portion of the surface region to melt and then resolidify;

obtaining a gas turbine engine component having a surface region in which a cooling hole having a desired diameter is to be formed and on which will be deposited a diffusion coating comprising a diffusion zone that will extend into the surface region of the component and an additive layer that will deposit on the surface region of the component at a growth rate determined by a first set of deposition parameters;

predicting a thickness of the additive layer of the diffusion coating on the component based on an inverse relationship between the thickness of the recast surface region of the substrate and the growth rate of the additive layer;

forming a hole in the surface region of the component, the hole having a formed diameter that is larger than the desired diameter of the cooling hole; and then

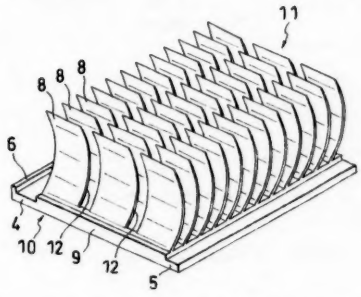
depositing the diffusion coating on the surface region of the component so that the additive layer grows sufficiently at the hole to yield the cooling hole approximately having the desired diameter.

US 6,339,880 B1

PROCESS FOR MANUFACTURING HEAT SINK

Keiichiro Ohta, Oyama, Japan, assignor to Showa Denko K.K., Tokyo, Japan

Filed Sep. 26, 2000, Appl. No. 669,718
Claims priority, application Japan, Sep. 28, 1999, 11-273542
Int. Cl. B23P *15/26*
U.S. Cl. 29—890.03 **5 Claims**



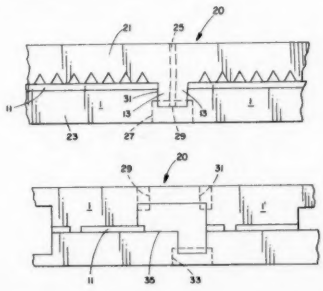
1. A process for manufacturing a heat sink comprising a heat dissipating base plate and a multiplicity of tonguelike fins formed on an upper surface of the base plate, the process comprising the steps of forming a heat sink blank made of an aluminum extrudate and having a part for forming a thick portion of the base plate, a fin forming portion provided on an upper side of the thick portion forming part integrally therewith, a thin portion of the base plate provided at at least one of opposite sides of the thick portion forming part, and a level reference ridge formed on an upper surface of the thin portion and having an upper end at the same level as an upper surface of the thick portion to be formed; and cutting the fin forming portion of the heat sink blank to a raised form at the same level as the level of the upper end of the reference ridge to form a multiplicity of tonguelike fins and form a thick portion of predetermined thickness under the fins.

US 6,339,881 B1

INK JET PRINTHEAD AND METHOD FOR ITS MANUFACTURE

Almon P. Fisher, and Peter J. John, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 17, 1997, Appl. No. 971,645
Int. Cl. B21D *53/76;* **B41J** *2/05*
U.S. Cl. 29—890.1 **9 Claims**



1. A method of fabricating a printhead for use in an ink jet printing device comprising the steps of:

a) providing a substrate having at least one substantially planar surface;

b) forming an array of heating elements on said surface and forming electrodes on said substrate for enabling addressing of each heating element;

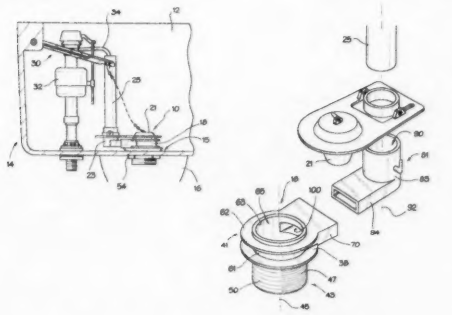
c) depositing an insulating layer on said planar surface;

d) treating said insulating layer to expose said heating elements;
e) forming an ink channel plate having at least one ink reservoir and multiple ink channels;
f) forming one of (i) a key element on said channel plate and a cooperative keyway element on said insulating layer, and (ii) a key element on said insulating layer and a cooperative keyway element on said channel plate and;
g) adhesively securing said channel plate to said substrate using said key element and said cooperative keyway element as an alignment aid to achieve proper positioning of said ink channels relative to said heating elements.

US 6,339,882 B1
FLUSH VALVE

Kent Goessling, Fullerton, and John McKay, Placentia, both of Calif., assignors to Fluidmaster, Inc., San Juan Capistrano, Calif.

Filed Jul. 27, 2000, Appl. No. 626,692
Int. Cl. B21D *51/16;* **E03D** *1/35;* **B29B** *7/00;* **B22C** *9/24*
U.S. Cl. 29—890.127 **5 Claims**



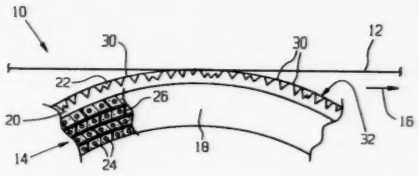
1. A method for manufacturing a flush valve, comprising the steps of:
injection molding a valve seat having a sidewall defining a central channel extending along a first axis and an opening facing along the first axis;
during the first molding step inserting a first core pin to define a first sleeve extending generally perpendicular to the axis of the valve seat;
injection molding a valve elbow with an overflow section extending along a second axis;
during the second molding step inserting a second core pin to define a second sleeve extending generally perpendicular to the second axis of the valve elbow; and
inserting the second sleeve of the valve elbow into the first sleeve of the valve seat to provide fluid communication between the overflow section of the valve elbow and the central channel of the valve seat.

US 6,339,883 B1
METHOD OF MAKING A ROLL FOR PAPER-MAKING MACHINE

Edwin X. Graf, Menasha; Daniel J. Foster, Appleton, both of Wis., and Douglas H. Angel, Concord, N.C., assignors to Voith Sulzer Paper Technology North America, Inc., Appleton, Wis.

Filed Feb. 25, 2000, Appl. No. 512,940
Int. Cl. B23P *15/00*
U.S. Cl. 29—895.32 **14 Claims**

1. A method of forming a roll for use in a paper-making machine, comprising the steps of:
forming a composite fiber shell;

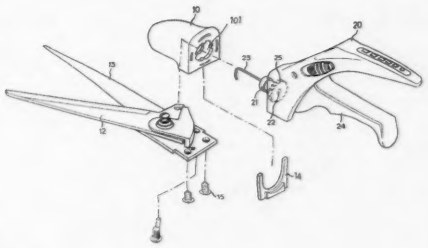


depositing a wear resistant layer over said shell, said wear resistant layer including a plurality of raised portions;
applying a release layer over said wear resistant layer, said release layer defining an outer surface of said roll, said release layer having better release properties than said wear resistant layer; and
removing a portion of said release layer at said outer surface, whereby at least some of said plurality of raised portions of said wear layer are generally coterminous with said outer surface.

US 6,339,884 B1
STRUCTURE OF SCISSORS FOR CUTTING GRASS

Chin-Chou Liu, P. O. Box 82-144, Taipei, Taiwan

Filed Jul. 21, 2000, Appl. No. 621,957
Int. Cl. B26B *13/28*
U.S. Cl. 30—248 **2 Claims**



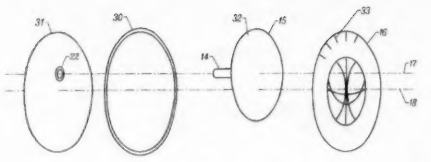
1. Scissors for cutting grass comprising:
a head having an end formed with an opening having a plurality of internal teeth;
a main body provided with a cylindrical member having a neck at an intermediate portion and a geared portion at an inner portion, said main body being engaged with said head with said cylindrical member fitted into said opening;
a handle pivotally connected with said main body;
a positioning member inserted between said head and said main body;
a linking wire having an end inserted through said cylindrical member to connect with said handle;
a movable blade having an end connected with another end of said linking wire; and
a stationary blade pivotally connected with said movable blade and mounted on a bottom of said head by screws.

US 6,339,885 B1
ASTROLABE HAVING ROTATING RETE AND PLATE

W. Daniel Hillis, Toluca Lake, Calif., assignor to The Long Now Foundation, Sausalito, Calif.

Filed Jan. 3, 2000, Appl. No. 476,865
Int. Cl. G01C *17/34;21/02*
U.S. Cl. 33—268 **12 Claims**

1. An astrolabe, comprising:



a rete rotatable about a first axis;

a plate rotatable about a second axis;

wherein a stereographic projection is used to project celestial bodies and a coordinate system onto a plane parallel with a plane of the ecliptic; and

wherein a celestial pole is placed at the center of said rete, and a line orthogonal to said ecliptic is projected onto the center of said plate.

US 6,339,886 B1

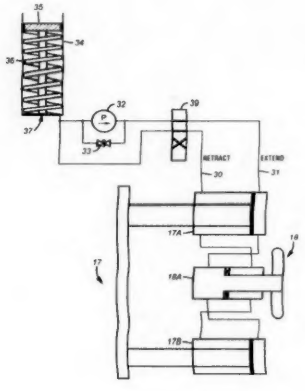
REMOTELY MEASURED CALIPER FOR WELLBORE FLUID SAMPLE TAKING INSTRUMENT

Paul A. Reinhardt, Houston, Tex., assignor to Baker Hughes, Inc., Houston, Tex.

Filed Dec. 22, 1998, Appl. No. 218,891

Int. Cl. G01B *5/12; 13/10*

U.S. Cl. 33—544.2 **15 Claims**



1. A wireline instrument for taking samples of formation fluid and for measuring an internal diameter of a wellbore, said instrument comprising:

a hydraulically extended mechanism for extraction of formation fluid, said mechanism being disposed for lateral extension from an instrument housing;

a hydraulic pump and selectively controllable valves for selectively controlling the lateral extension of said mechanism from said instrument housing into compressive engagement of a wellbore wall; and,

a hydraulic fluid reservoir to supply hydraulic fluid to said pump for extending and retracting said mechanism, said reservoir including a sensor for measuring a volume of said hydraulic fluid in said reservoir, said measured volume substantially corresponding to a diameter of said wellbore that is engaged by said mechanism.

US 6,339,887 B2

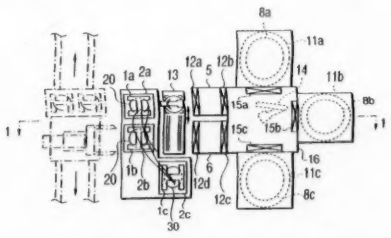
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR

Shigekazu Kato, Kudamatsu; Kouji Nishihata, Tokuyama; Tsunehiko Tsubone, Hikari, and Atsushi Itou, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of application No. 09/461,432, filed on Dec. 16, 1999, which is a continuation of application No. 09/177,495, filed on Oct. 23, 1998, now Pat. No. 6,012,235, which is a continuation of application No. 09/061,062, filed on Apr. 16, 1998, now Pat. No. 5,950,330, which is a continuation of application No. 08/882,731, filed on Jun. 26, 1997, now Pat. No. 5,784,799, which is a division of application No. 08/593,870, filed on Jan. 30, 1996, now Pat. No. 5,661,913, which is a continuation of application No. 08/443,039, filed on May 17, 1995, now Pat. No. 5,553,396, which is a division of application No. 08/302,443, filed on Sep. 9, 1994, now Pat. No. 5,457,896, which is a continuation of application No. 09/096,256, filed on Jul. 26, 1993, now Pat. No. 5,349,762, which is a continuation of application No. 07/751,952, filed on Aug. 29, 1991, now abandoned. This application Jan. 24, 2001, Appl. No. 767,837. Claims priority, application Japan, Aug. 29, 1990, 2-225321

Int. Cl. F26B *5/04*

U.S. Cl. 34—406 **19 Claims**



1. An apparatus for treating samples in a vacuum, comprising:

vacuum processing chambers for treating the samples;

cassette tables for mounting a set of cassettes in which plural samples are stored;

a transfer device for supplying said set of cassettes to said cassette tables, said transfer device moving in front of said cassette tables located along lock chambers; and

a transfer structure for carrying in samples from said cassettes to said vacuum processing chambers through said lock chambers, and for carrying out treated samples to said cassettes through said lock chambers,

wherein said transfer structure is provided with a device which faces to a set of samples disposed in said cassettes and sequentially transfers said samples one by one to said lock chambers in which one sample is to be disposed, and another device which is disposed in a conveyor chamber of a vacuum loader and which transfers sequentially said samples one by one to vacuum processing chambers substantially at a same height as said vacuum processing chambers.

US 6,339,888 B1

DISPOSABLE SHOE COVER

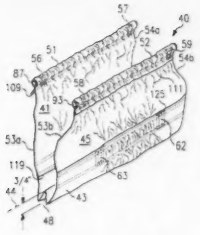
Kevin K. Brunson, Argyle; Marc E. Pinney, Grapevine; Barbara A. McCarty, Halton City; Frank D. Rasberry, Bedford, and Sheldon T. Fields, Fort Worth, all of Tex., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation of application No. 09/069,299, filed on Apr. 29, 1998, now Pat. No. 6,023,856, which is a continuation-in-part of application No. 08/686,348, filed on Jul. 25, 1996, now abandoned. This application Feb. 14, 2000, Appl. No. 503,643.

Int. Cl. A43B *3/16; 1/02;* **A43D** *11/00*

U.S. Cl. 36—7.1 R **4 Claims**

1. A method of fabricating a disposable shoe cover comprising the steps of:



attaching a plurality of elastomeric bands to a continuous web of material;

forming a blank having three panels defined by the elastomeric bands and having a generally rectangular configuration from the continuous web of material;

said panels defining two side panels, and a middle panel having two opposite edges, each said edge forming a longitudinal seam line between said middle panel and one said side panel;

wherein one said elastomeric band is disposed along at least a portion of each said longitudinal seam line, and said middle panel defines an integral seamless sole portion of said shoe cover;

folding the blank to partially define an opening to allow placing the disposable shoe cover over a shoe on a wearer's foot,

bonding adjacent portions of the folded blank to further define the opening for the disposable shoe cover and to define a heel portion and a toe portion for the shoe cover; and

releasing the disposable shoe cover from the continuous web of material.

US 6,339,889 B1

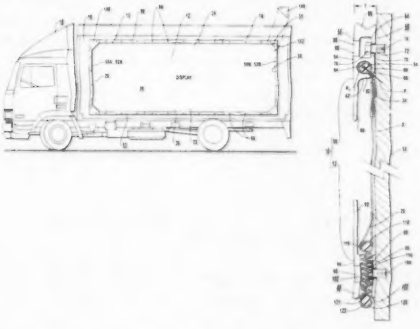
SPRING BIASED ASSEMBLY FOR MOUNTING FLEXIBLE SHEET ON STRUCTURE

Daniel A. Griesemer, Sandy, and Paul F. Bauer, Layton, both of Utah, assignors to Mobile Impact, Inc., Layton, Utah

Continuation-in-part of application No. 09/274,948, filed on Mar. 23, 1999. This application Sep. 16, 1999, Appl. No. 397,467.

Int. Cl. G09F *17/00*

U.S. Cl. 40—603 **30 Claims**



1. An assembly for mounting a flexible display sheet having a first edge and an opposing second edge to a structure, the assembly comprising:

(a) an elongated retention bracket configured for rigid attachment to the structure, the retention bracket having a hole transversely extending therethrough;

(b) a spring having a first end and an opposing second end, the spring being selectively disposed within the hole in the retention bracket, the first end of the spring being configured to couple with the second edge of the display sheet, and

(c) means for securing the second end of the spring to the retention bracket, the means comprising a brace removably coupled with the second end of the spring such that the spring biases the brace against the retention bracket.

US 6,339,890 B1

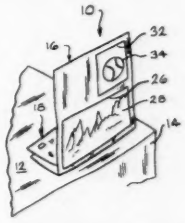
MULTIPLE POSITION EASEL MAT

Robert N. Farah, and Thomas J. Kanouse, both of El Paso, Tex., assignors to Gross Manufacturing Corporation, El Paso, Tex.

Filed Jan. 25, 2000, Appl. No. 491,226

Int. Cl. A47G *1/01*

U.S. Cl. 40—750 **19 Claims**



1. A multiple position frame for pictorial or printed material comprising, in combination,

a frame portion having a front panel defining three edges and an end and a rear panel defining three edges and an end adjacent said end of said front panel, said front panel defining at least one opening for displaying such pictorial or printed material, said panels secured together along said three edges, and

a support portion having a first flap extending from one of said ends and a second flap extending from another of said ends, said first flap including a pair of spaced apart projections, said second flap including a pair of spaced apart slots,

whereby said pair of projections may be disposed in said pair of slots and said frame may be appropriately disposed to accommodate such pictorial or printed material.

US 6,339,891 B1

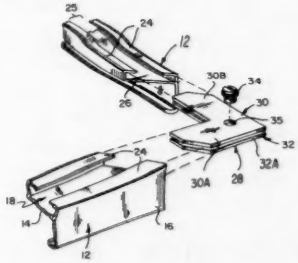
METAL PICTURE FRAME

Eugene Cox, Midlothian, Va., assignor to Nielsen & Bainbridge L.L.C., Paramus, N.J.

Provisional application No. 60/148,970, filed on Aug. 13, 1999. This application Nov. 30, 1999, Appl. No. 450,979.

Int. Cl. A47G *1/10*

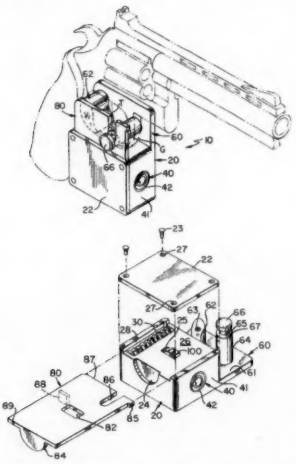
U.S. Cl. 40—785 **16 Claims**



1. A picture frame, comprising mitred metallic frame sections, each frame section having a locking channel and a rearwardly facing opening, and a corner piece in each corner of the frame for locking adjacent frame sections together, each corner piece comprising an L-shaped tapped plate and an L-shaped backing plate, each plate including two joined legs and outer and inner surfaces, the legs of each plate extending into the locking channels of adjacent frame sections, each tapped plate having a single threaded aperture, and a screw extending through said aperture and adapted

to engage the associated backing plate, said screw being accessible through the rearwardly facing opening of at least one frame section.

US 6,339,892 B1
TRIGGER LOCKING MECHANISM WITH SLIDABLE PLATE
Israel Ramos, 2309 NW. 7 St., Miami, Fla. 33125
Filed Aug. 4, 2000, Appl. No. 631,733
Int. Cl. F41A *17/00*
U.S. Cl. 42—70.07 **4 Claims**



1. A safety locking mechanism for weapons having a trigger with a protective guard, comprising:

A) a housing defining an internal space, having first and second openings connecting said internal space to the exterior;

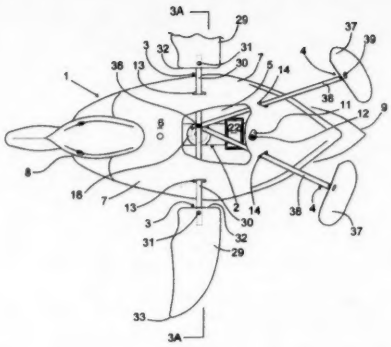
B) locking means mounted in said internal space and including an actuating key partially insertable through said first opening, said locking means further including a locking pin movable between two predetermined positions;

C) a fixed plate having first and second surfaces mounted to said housing and extending therefrom a predetermined distance, said fixed plate includes a headed post and a body member mounted perpendicularly on said first surface with predetermined separation to receive the trigger of a weapon inbetween and said body member having cooperative dimensions to substantially occupy the space between the trigger and the protective guard of a weapon; and

D) a slidable plate having first and second ends and being retractable within said housing and protruding through said second opening, said slidable plate being releasably engaged by said locking pin, and said slidable plate extending in a plane that is kept at a parallel and spaced apart relationship with respect to said fixed plate, and said first end including a slot for cooperatively receiving said headed post.

US 6,339,893 B1
WATERFOWL DECOY WITH SEPARATELY MOVABLE WINGS AND FEET
Walter Solomon, 505 N. Price, Marshall, Tex. 75670
Continuation-in-part of application No. 08/675,960, filed on Jul. 5, 1996, now Pat. No. 5,809,683. This application Sep. 21, 1998, Appl. No. 158,950.
This patent is subject to a terminal disclaimer.
Int. Cl. A01M *31/06*
U.S. Cl. 43—3 **20 Claims**

1. Apparatus for addition of movable appendages to a waterfowl decoy adapted to float on the surface of a body of water, having a



body with a top, two opposing sides, a tail, and a hollow interior, the body including an opening in the top thereof for access to the hollow interior thereof, and the body also including a plurality of slots disposed in paired opposing relationship in the sides of the body and positioned such that each pair of slots defines a plane generally parallel to the surface of the water when the decoy is floating on the surface of a body of water, the apparatus comprising

a drive means having a rotatable output shaft, said drive means disposed in said hollow interior of said body and connected to said body with said output shaft disposed in generally perpendicular relation to said plane defined by each pair of said slots;

a generally planar disk having a center and an outer edge, said disk connected to said output shaft of said drive means with said disk generally perpendicular to said output shaft and generally parallel to said plane defined by each pair of said slots; and

a plurality of appendage assemblies, each including an elongate support member with an inner end and an outer end, an appendage connected to said support member near said outer end thereof, said appendage assemblies disposed in paired opposing relationship with one of each pair of said appendage assemblies on a respective side of said body of said decoy with said support members extending through a respective one of said slots and mutually pivotally connected at said inner ends of each pair thereof to said disk, with said appendages disposed exterior to said body such that said support members lie generally parallel to the surface of the water when the decoy is floating on the surface of a body of water, whereby activation of said motor induces oscillatory movement of said appendage assemblies generally parallel to said plane defined by said slots.

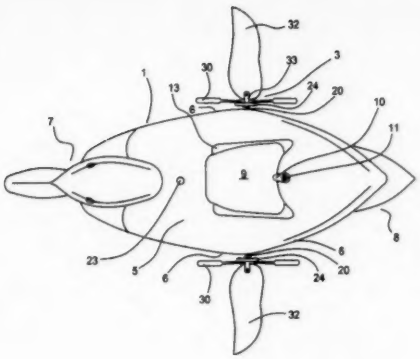
US 6,339,894 B1
WATERFOWL DECOY WITH INTERCHANGEABLE MOVABLE APPENDAGES
Walter Solomon, 505 N. Price, Marshall, Tex. 75670
Continuation-in-part of application No. 09/247,842, filed on Feb. 10, 1999. This application Jul. 15, 1999, Appl. No. 354,025.
Int. Cl. A01M *31/06*
U.S. Cl. 43—3 **19 Claims**

1. A waterfowl decoy with rotating appendages, comprising

a body with a longitudinal axis, a head end, a tail end, a top, two opposing sides, and a hollow interior with a pair of shaft apertures formed on said sides in opposed relation across the longitudinal axis;

a drive assembly including a pair of rotatable drive shafts each extending from the interior of the body through one of the respective shaft apertures;

a pair of appendage assemblies, each having a hub, hub aperture and at least one appendage, connected to said drive shafts



extending from the decoy body, and each appendage having a first end connected in proximate relation to the hub and extending outwardly from the first end; and

said one of the pair of appendage assemblies includes an elongated wing appendage extending generally parallel to the longitudinal axis of one of said drive shafts, said elongated wing rotating without contact to a water level.

US 6,339,895 B1

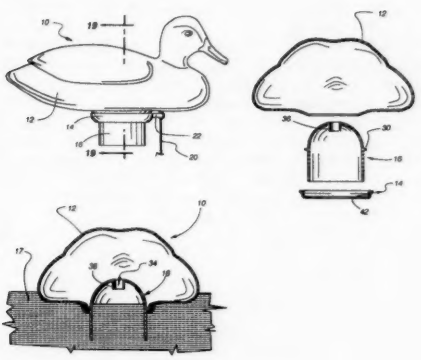
COLLAPSIBLE GAME DECOY

James Lawson, 1405 Hillside La., Bozeman, Mont. 59715

Provisional application No. 60/117,765, filed on Jan. 29, 1999. This application Jan. 28, 2000, Appl. No. 493,840.

Int. Cl. A01M *31/06*

U.S. Cl. 43—3 **13 Claims**



1. A collapsible game decoy comprising

a decoy body, wherein said decoy body includes a bottom wall having an opening therein; and

an air-capture-and-retention system, wherein said air-capture-and-retention system comprises

a base, wherein said base includes a top portion and a bottom portion, and wherein a lip divides said top portion from said bottom portion; and

a snap member, wherein a portion of said decoy body adjacent to said opening in said bottom wall is snappingly retained between said lip and said snap member when said snap member and said base are snappingly attached to said decoy body.

US 6,339,896 B1

INTER-LINE FISHING ROD

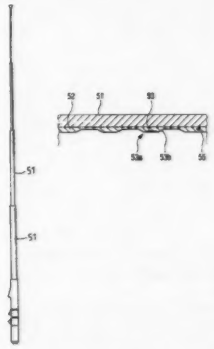
Masaru Akiba, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Continuation of application No. 08/470,446, filed on Jun. 6, 1995, now abandoned, which is a continuation of application No. 08/091,064, filed on Jul. 14, 1993, now Pat. No. 5,488,797. This application Apr. 20, 1997, Appl. No. 845,282.

Claims priority, application Japan, Apr. 17, 1992, 4-32110; Jul. 14, 1992, 4-55249

Int. Cl. A01K *87/04;87/00*

U.S. Cl. 43—18.1 **49 Claims**



5. An inter-line fishing rod in which a fishline is introduced into an inside of the rod, said inter-line fishing rod including at least one tubular member molded from a prepeg made of synthetic resin as a matrix and reinforced with high-strength fibers,

wherein said at least one tubular member has an inner circumferential surface defined by a recessed portion and a protruded portion alternately arranged in a sectional view; and

wherein at least a portion of said inner circumferential surface defined by said recessed portion has a water repellant property.

US 6,339,897 B1

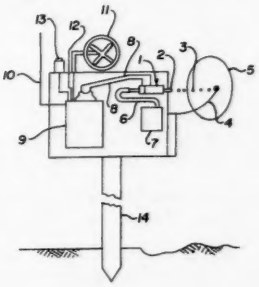
METHOD AND APPARATUS FOR DISPENSING AIRBORNE MATERIALS FOR CONTROLLING PESTS

Donald J. Hayes, Plano; Christopher J. Frederickson, Little Elm, and Murray Sinks, Dallas, all of Tex., assignors to MicroFab Technologies, Inc., Plano, Tex.

Continuation of application No. 09/110,486, filed on Jul. 6, 1998, now abandoned, Provisional application No. 60/051,900, filed on Jul. 8, 1997. This application Mar. 8, 2001, Appl. No. 801,994.

Int. Cl. A01M *13/00;7/00;1/20*

U.S. Cl. 43—132.1 **39 Claims**



1. An apparatus for controlling pests by controlled dispensing of pest specific fluids selected to predictably alter the physiology or behavior of agricultural pests, comprising:

an electronically actuated dispenser having a fluid reservoir and an ejection device with an orifice in fluid communication with the fluid reservoir wherein said dispenser is configured to eject a series of micro-droplets of reservoir fluid of selected uniform diameter less than about 500 microns;

the reservoir being a sealed reservoir except for a path of fluid communication to the ejection device;

a pest specific volatile fluid within said reservoir, the fluid being selected to predictably alter the physiology or behavior of pests;

a control unit including drive electronics operably connected to the ejection device to actuate the dispenser during select time intervals in such a manner as to produce a succession of individual micro-droplets of said selected uniform diameter which are ejected from the orifice at a rate sufficient to release a desired amount of the volatile fluid at a uniform rate during the selected time intervals, in order to control pests; and

a shutter operated by signals from the control unit wherein said orifice is covered by the shutter when the dispenser is not operating.

US 6,339,898 B1

PLANT TREATMENT MATERIAL AND METHOD

Jonathan Dallas Toye, Old Railway Road, Kumeu, Auckland, New Zealand

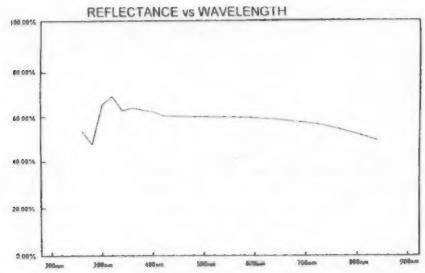
PCT No. PCT/NZ97/00157, § 371 Date Aug. 20, 1999, § 102(e) Date Aug. 20, 1999, PCT Pub. No. WO98/21935, PCT Pub. Date May 28, 1998

PCT Filed Nov. 19, 1997, Appl. No. 308,438

Claims priority, application New Zealand, Nov. 19, 1996, 299783; Sep. 18, 1997, 328780

Int. Cl. A01G *7/00*

U.S. Cl. 47—9 **86 Claims**



1. A reflective plant treatment material which reflects more solar radiation than it either transmits or absorbs in the UV (about 280–400 nm), visible (about 400–700 nm) and near infrared (about 700–800 nm) ranges; and which transmits at least part of radiation in the range about 800–2500 nm and at least part of radiation above about 2500 nm.

US 6,339,899 B1

DEVICE, ESPECIALLY FOR GROWING PLANTS

Erich Lehmann, Arnhofen 82, D-93326 Abensberg-Arnhofen, Germany

PCT No. PCT/EP98/07578, § 371 Date Sep. 15, 2000, § 102(e) Date Sep. 15, 2000, PCT Pub. No. WO99/35898, PCT Pub. Date Jul. 22, 1999

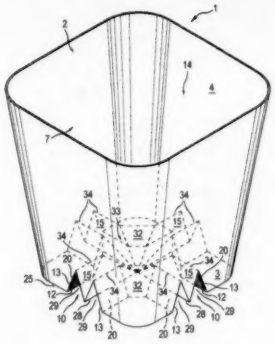
PCT Filed Nov. 24, 1998, Appl. No. 600,230

Claims priority, application Germany, Jan. 14, 1998, 198 01 141

Int. Cl. A01G *9/02*

U.S. Cl. 47—65.5 **11 Claims**

1. A device for growing plants, comprising:



at least one pot having at least one opening in its base, the at least one opening having a first part formed in the base and extending up to a pot wall and an adjacent second part formed in said pot wall, said second part trapezoidally enlarging toward the base and being formed in a region of the pot wall close to the base, and;

at least one ridge which is substantially horizontal, at least partly set at a distance from the base and covers the first part of the at least one opening by forming lateral passage openings;

the first part of the at least one opening and each passage opening have a longitudinal axis extending in the radial direction of the pot and one end of the at least one ridge being connected to the pot wall at the second part of the at least one opening.

US 6,339,900 B1

FLORAL SLEEVE HAVING AN EXTENDABLE SKIRT AND METHODS

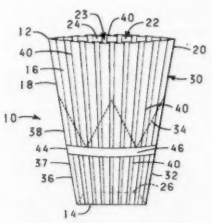
Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc.

Continuation-in-part of application No. 09/064,460, filed on Apr. 22, 1998, which is a continuation-in-part of application No. 08/788,616, filed on Jan. 27, 1997, now Pat. No. 5,749,171, which is a continuation-in-part of application No. 08/237,078, filed on May 3, 1994, now Pat. No. 5,625,979, which is a continuation-in-part of application No. 08/220,852, filed on Mar. 31, 1994, now Pat. No. 5,572,851. This application Jul. 24, 2000, Appl. No. 625,619.

This patent is subject to a terminal disclaimer.

Int. Cl. A01G *9/02*

U.S. Cl. 47—72 **36 Claims**



1. A preformed sleeve for covering a pot having an upper end, a lower end, and an outer peripheral surface, comprising:

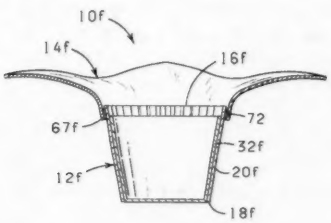
a base portion having an upper end, a lower end, an outer peripheral surface, and an interior space when opened;

a skirt portion extending from the upper end of the base portion;

a plurality of folds in the base portion and in the skirt portion; and

a constriction element preattached to a portion of the base portion and disposed only on the outer peripheral surface thereof so as to form a constricted area in the folds in an upper portion of the base portion substantially adjacent the skirt portion, and wherein when a pot is disposed within the interior space of the sleeve and pressure is exerted on the constricted area by the pot, the skirt portion automatically extends a distance angularly to the base portion due to the presence of the constricted area formed by the constriction element.

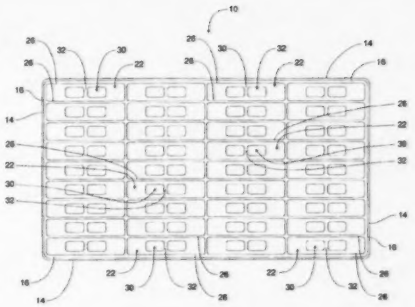
US 6,339,901 B1
ACCORDION TYPE PLANT COVER WITH ATTACHED SKIRT AND METHODS
Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc.
Continuation of application No. 09/344,576, filed on Jun. 25, 1999, which is a continuation of application No. 08/242,477, filed on May 13, 1994, now Pat. No. 5,974,736. This application Aug. 14, 2000, Appl. No. 638,660.
This patent is subject to a terminal disclaimer.
Int. Cl. A01G *9/02*
U.S. Cl. 47—72 **9 Claims**



1. A flower pot cover, comprising:
a base formed from a sheet of material, said base having an upper end, a lower end, and an outer peripheral surface having accordion pleating formed in at least a portion thereof so as to permit the base to expand and contract to both closely encompass and follow the contours of a pot, an opening intersecting the upper end forming an inner peripheral surface and a retaining space;
a skirt formed from a sheet of material, said skirt extending from the base and being substantially non-contractible and non-expandable.

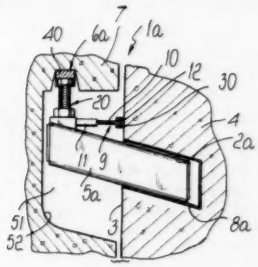
US 6,339,902 B1
PROPAGATION TRAY
Douglas A. Holmberg, 1321 N. Valrico Rd., Valrico, Fla. 33954
Filed Apr. 3, 2000, Appl. No. 541,955
Int. Cl. A01G *9/02*
U.S. Cl. 47—87 **16 Claims**

1. A propagation tray configured to receive a plurality of seedlings or root cuttings comprising a tray member and a plurality of propagation cells each having an upper centrally disposed aperture formed in the upper portion thereof to receive a growing media and seedlings or root cuttings therein, a lower centrally disposed drainage aperture formed in the lower portion thereof and a growing media support member formed across said lower centrally disposed drainage aperture to retain the growing media and seedling or root cutting therein, an intermediate potting portion cooperatively formed by a pair of converging side walls having opposite ends interconnected by a corresponding pair of end walls to receive a growing media therein, said converging side walls are substantially flat and said end walls are substantially arcuate, the length of said propagation cell is at least twice the width thereof, the length of each side upper aperture is at least one and one half times the depth



thereof, the area of said upper centrally disposed aperture is at least three times the area of said lower centrally disposed drainage aperture.

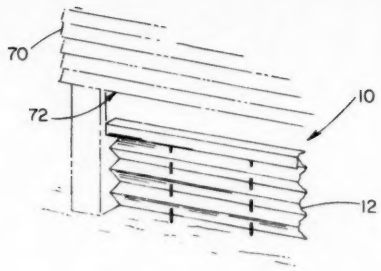
US 6,339,903 B1
SUPPORTING DEVICE FOR PREFABRICATED BUILDING COMPONENTS, PARTICULARLY FOR PREFABRICATED UNITS MADE OF CONCRETE OR THE LIKE, WITH HIGH RESISTANCE TO EARTHQUAKES
Sergio Zambelli, Via Stezzano, 28, and Benito Zambelli, Via Roma, 44, both of 24050 Zanica, Italy
Filed May 22, 2000, Appl. No. 576,132
Int. Cl. E04C *5/12*
U.S. Cl. 52—167.1 **22 Claims**



1. A supporting device for prefabricated building components,particularly for prefabricated units made of concrete or the like, comprising a bush-like seat which is formed in one face of a first unit and a supporting element which is detachably inserted in said seat and has an end which protrudes from said seat and from said face of the first unit and forms a resting region for a second unit, further comprising shock-absorbing means which are interposed between said supporting element and said first unit and/or between said supporting element and said second unit, in order to damp vibrations developed according two orthogonal directions, along the surface of the first unit and perpendicularly with respect to said first unit.

US 6,339,904 B1
SKIRT FOR A RAISED DWELLING
William F. Carrone, P.O. Box 533, Arabi, La. 70032-0533, and Donald J. Carrone, 401 Norton Ave., Arabi, La. 70032
Filed May 19, 2000, Appl. No. 572,880
Int. Cl. E04D *2/38*
U.S. Cl. 52—169.12 **6 Claims**

1. A home skirting device for restricting air-flow below a raised dwelling, said device comprising:



a panel having a front side and a back side, said panel having a top edge and a bottom edge, said panel being corrugated such that pleat folds are defined, said pleat folds having ridge and valley lines orientated generally parallel to said Lop edge of said panel, said panel having a plurality of sets of apertures therein, each of said sets of apertures being positioned along a line orientated generally perpendicular to said top and bottom edges of said panels; wherein a space between each of said ridge and valley lines has one of said apertures therein;

a plurality of rods, each of said rods having a first end and a second end, said first ends being generally pointed, each of said rods extending through one of said set of apertures, said first ends of said rods being removably insertable in the ground;

a fastening means for removably fastening said panel to the dwelling being attached to said top edge of said panel; and

wherein each of said second ends of said rods is removably attached to said fastening means and said bottom edge of said panel is selectively positionable between a position generally adjacent to said fastening means and a position abutting the ground.

US 6,339,905 B1

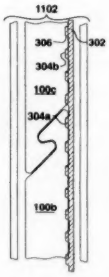
HINGELESS, PARALLEL STORING, SECTIONAL APERTURE COVERING

Clark Craig, 450 Weatherly Rd., Inman, S.C.

Provisional application No. 60/093,319, filed on Jul. 20, 1998. This application Jul. 20, 1999, Appl. No. 357,140.

Int. Cl. E04F *13/12*

U.S. Cl. 52—174 **20 Claims**



1. An aperture covering comprising:

at least two interconnectable, but not fixedly connected panels, each panel having a surface that defines a plurality of notches and each panel having interlocking edges wherein the bottom edge of one panel releasably interlocks with the top edge of another panel in a way that, when interlocked, force exerted on one panel results in force being exerted on the proximate panels;

a storage area for storing said panels when said covering is in an open position;

at least one track positioned along a path within which edges of said panels move when said cover is moved from an open to a closed position; and

a toothed belt which is positioned in said track and which mates with said panel notches;

wherein said panels are stacked in said storage area and removed one at a time in such a manner that, upon removal of a first panel from said storage area and into said track, said first panel interlocks with a second panel, forcing said second panel from said storage area into said track, wherein interlocking and removal of said panels continues until all said panels are removed or said first panel reaches the end of said track, resulting in said aperture covering being in the aperture-covered position, and wherein the toothed belt extends substantially the full length of the track.

US 6,339,906 B1

FRONTAGE ELEMENT WITH DECORATIVE FACING

Marc Ginet, Saint-Maur, and Michel Le Feron De Longcamp, Mathieu, both of France, assignors to Elf Atochem S.A., Puteaux, France

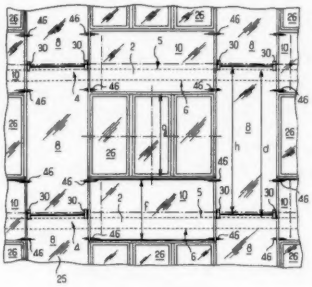
PCT No. PCT/FR97/01771, § 371 Date Jun. 10, 1999, § 102(e) Date Jun. 10, 1999, PCT Pub. No. WO98/15699, PCT Pub. Date Apr. 16, 1998

PCT Filed Oct. 6, 1997, Appl. No. 269,747

Claims priority, application France, Oct. 8, 1996, 96 12260

Int. Cl. E04B *2/88*

U.S. Cl. 52—235 **12 Claims**



1. A frontage element including a support and a panel, said panel comprising at least two fixing parts fixed to the support and a generally plane wall extending between the two fixing parts, at least one of the fixing parts being set back from the plane of the wall and being deformable so that the wall is free to move parallel to itself relative to the support if the temperature of the panel is modified, the support including a core having at least one lateral face extending in a general direction perpendicular to the wall of the panel, the support including fixing means for fixing the at least one of the at least two fixing parts facing and at a distance from the lateral wall of the core, the support including first and second assembly parts constituting the fixing means, the first assembly part being fixed to the core and facing the core, and the second assembly part being fixed to the first assembly part with a thermally insulative material interposed seal disposed between the first assembly part and the second assembly part.

US 6,339,907 B1

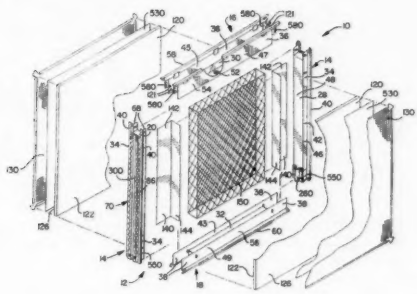
SYSTEM OF WALL PANELS

Paul Dame, Holland; Duane McClung, Kalamazoo, and Thomas J. Newhouse, Grand Rapids, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Division of application No. 08/864,459, filed on May 27, 1997, now Pat. No. 6,167,665, Provisional application No. 60/018,956, filed on Jun. 7, 1996. This application Jun. 21, 2000, Appl. No. 598,528.

Int. Cl. E04H *1/00*

U.S. Cl. 52—239 **23 Claims**



1. A system of wall panels comprising:

a plurality of wall panels, each of said wall panels having opposite ends and comprising a hanger bracket attached to each of said ends, said hanger bracket comprising a pair of channels having an upper and lower edge;

a corner post comprising a substantially square elongated tube having a length and four sides, each side of said tube comprising a pair of channels running the length of the tube, each of said channels having an upper and lower edge;

an upper and lower draw block comprising draw surfaces engaging respectively said upper and lower edges of said channels of said corner post on one of said sides thereof and of said hanger bracket on one of said ends of one of said plurality of said wall panels, wherein said draw blocks connect said hanger bracket and said tube; and

a draw rod connecting said upper and lower draw blocks, said draw rod disposed between said hanger bracket and said tube.

US 6,339,908 B1

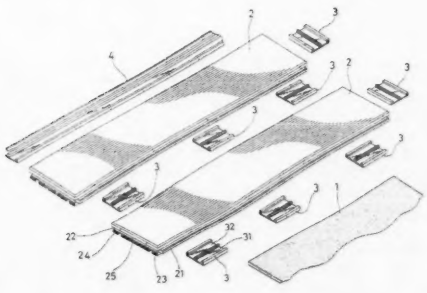
WOOD FLOOR BOARD ASSEMBLY

Fu-Ming Chuang, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jul. 21, 2000, Appl. No. 624,870

Int. Cl. E04B *2/08*

U.S. Cl. 52—589.1 **3 Claims**



1. A wood floor board assembly comprising: a plurality of base plates (**2**), and a plurality of linking members (**3**), wherein,

each of said base plates (**2**) has a front side provided with a rib (**21**) and a rear side defining a recess (**22**), said rib (**21**) having a bottom provided with a first snap portion (**23**), said recess (**22**) having a bottom provided with a second snap portion (**24**), a contact portion (**25**) provided on a bottom of each of said base plates (**2**) and located between said first snap portion (**23**) and said second snap portion (**24**), each of said base plates (**2**) having a left side provided with a third snap portion (**26**) having an upward directed opening and a right side provided with a fourth snap portion (**27**) having a downward directed opening; and

each of said linking members (**3**) has a front side defining a first fitting channel (**31**), a rear side defining a second fitting channel (**32**), and a mediate portion provided with an interface flange (**33**), each of said front side and said rear side of said linking member (**3**) provided with a locking portion (**34**) which extends inward and is inclined downward.

US 6,339,909 B1

PROFILED SPACERS FOR INSULATION GLAZING ASSEMBLY

Erwin Brunnhofer, Fuldabrück; Bernhard Goer, Recklinghausen, and Jürgen Regelmann, Witten, all of Germany, assignors to Technoform Caprano + Brunnhofer oHG, Fuldabruck, Germany

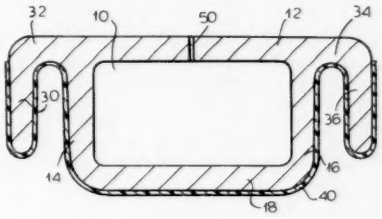
PCT No. PCT/DE98/02470, § 371 Date Mar. 21, 2000, § 102(e) Date Mar. 21, 2000, PCT Pub. No. WO99/15753, PCT Pub. Date Apr. 1, 1999

PCT Filed Aug. 18, 1998, Appl. No. 509,173

Claims priority, application Germany, Sep. 25, 1997, 197 42 531; Feb. 10, 1998, 198 05 265

Int. Cl. E04C *2/54*

U.S. Cl. 52—786.13 **32 Claims**



1. A spacer profile for a spacer frame to be mounted in the space between panes forming an insulating window unit, said spacer profile comprising a profile body formed with a chamber for receiving hygroscopic material and with at least one contact web for lying against the inside of one of said panes on at least one side of the chamber, said contact web being connected with the chamber via a bridge section, whereby the profile body has at least one outwardly open area with a U-shaped cross section, whose flanks are formed by the contact web and an adjacent side wall of the chamber and a base is formed by the bridge section connecting the same, the profile body of the spacer profile consists of an elastically-plastically deformable material with a heat conduction value of $\lambda<0.3$ W/(mK), the flanks of the area with said U-shaped cross section having a height which is at least twice the width of the base, and that at least the contact web being permanently materially connected with a deformable reinforcement layer made of a metal with a heat conduction value of $\lambda<50$ W/(Mk).

US 6,339,910 B1

DEVICE FOR THE INSERTION OF PRODUCTS INTO A PACKAGING CONTAINER

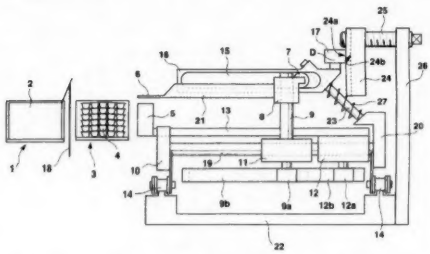
Bernd Hähnel, Stutensee, and Walter Dreizler, Minfeld, both of Germany, assignors to IWK Verpackungstechnik GmbH, Stutensee, Germany

Filed Oct. 19, 1999, Appl. No. 420,422

Claims priority, application Germany, Oct. 21, 1998, 198 48 452

Int. Cl. B65B *1/04;35/30;35/50*

U.S. Cl. 53—258 **10 Claims**



1. A device for insertion of products into a packaging container in a packaging machine, the device comprising:

a frame;

a cover element;

an insertion plunger guided along a path parallel to the products;

a first displacement control mounted to said frame and communicating with said cover element and said insertion plunger for substantially horizontal displacement thereof to preposition said cover element above the products and to cause said insertion plunger and said cover element to exercise a mutually cooperative insertion motion for insertion of the products into the container; and

a second displacement control mounted to said frame, said second displacement control having a substantially vertical control surface means, a first control element seating on said control surface means for horizontal displacement thereon, means for connecting said first control element to said cover element, and a transformation device communicating with said connecting means for transforming said horizontal displacement of said first control element into a vertical lowering of said cover element onto the products, wherein said connecting means comprise means for substantially decoupling a horizontal displacement of said cover element effected by said first displacement control from a vertical positioning of said cover element effected by said vertical control surface means in cooperation with said transformation device.

US 6,339,911 B2

METHOD AND APPARATUS FOR MANUFACTURING PACKAGING BAGS, AND BAGS OBTAINED THEREBY

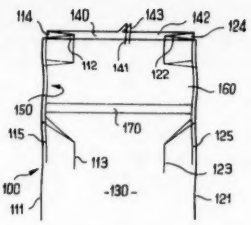
Georges Henri Bois, Neuilly-sur-Seine, France, assignor to Flexico-France, Henonville, France

Division of application No. 09/155,422, filed as application No. PCT/FR98/00138, filed on Jan. 29, 1998, now Pat. No. 6,261,000. This application Jun. 4, 2001, Appl. No. 871,909.

Claims priority, application France, Jan. 29, 1997, 97 00936

Int. Cl. B65B *9/20;61/00*

U.S. Cl. 53—410 **32 Claims**



1. A method of manufacturing packaging bags, comprising the steps of:

providing a packaging bag sheet, having a longitudinal extent, for forming a packaging bag;

folding said packaging bag sheet so as to form a pair of laterally spaced bellow regions within side edge portions of said packaging bag sheet;

forming cutouts at a mouth region and within each one of said pair of laterally spaced, bellow regions of said packaging bag sheet so that said packaging bag has only two sheet thicknesses superimposed with respect to each other within the mouth region of said packaging bag, wherein each one of said cutout portions is defined by two rectilinear longitudinal edges coinciding respectively with outer definition lines of said laterally spaced bellow regions, a first rectilinear transverse edge extending transversely with respect to said longitudinal extent of said packaging bag sheet, and a second non-rectilinear transverse edge that is concave towards said mouth region of said packaging bag; and

heat sealing edge portions of said packaging bag sheet to edge portions of said cutouts so as to close and seal said packaging bag.

US 6,339,912 B1

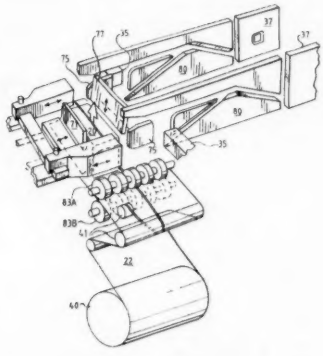
EASY OPEN PACKAGE FOR FOOD ITEMS SUCH AS LOAVES OF PROCESSED CHEESE

Kenneth Fahs; David Sullivan, and Michael Nooyen, all of Green Bay, Wis., assignors to Schreiber Foods, Inc., Green Bay, Wis.

Filed Jan. 28, 2000, Appl. No. 493,910

Int. Cl. B65B *61/18*

U.S. Cl. 53—412 **7 Claims**



1. A process for forming an easily opened, hermetically sealed food package having two opposing ends with at least one of the opposing ends of the package including two pairs of opposing flaps, comprising the steps of:

providing a plastic film having a tear resistance and serrated edges;

wrapping the plastic film about a food item and using the plastic film to form the two pairs of opposing flaps;

affixing a tear strip to the film so that the tear strip is sealed to the film by a sealing force that is greater than the tear resistance of the film, the tear strip having at least one accessible end associated with at least one accessible, unsealed end of the film adjacent one or more of the serrated edges of the film;

at least partially sealing one of the two pairs of flaps of an opposing end to each other, and at least partially sealing the

other of the two pairs of flaps of the same opposing end to each other, to thereby form a package end which is hermetically sealed, the scaling step being performed such that at least one opposing end of the package has an unsealed ear portion formed by using a seal bar with an aperture, and the at least one accessible end of the tear strip lies adjacent the unsealed ear portion;

forming the plastic film about the food item and sealing the film to provide a hermetically scaled package entirely enclosing the food item;

wherein a pulling force exerted on the at least one accessible end results in concentration of a film tearing force beginning at one of the one or more serrated edges of the film adjacent the at least one accessible end, resulting in tearing of the film in a direction generally toward the tear strip following by tearing of the film in a direction parallel to the tear strip, thereby allowing easy opening of the package without damaging the food item.

US 6,339,913 B1

METHOD FOR IMPROVING THE OSTEOINTEGRATION OF OSSEUS FIXING IMPLANTS

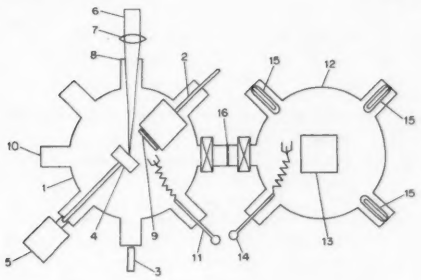
Betty Mireya Leon Fong; Juan Maria Pou Saracho; Jorge Luis Arias Otero; Francisco Jose Garcia Sanz; Mercedes Belen Mayor Leiros; Pio Manuel Gonzalez Fernandez, and Mariano Jesus Perez-Martinez Y Perez-Amor, all of Vigo, Spain, assignors to Universidad de Vigo, Spain

Continuation of application No. PCT/ES97/00269, filed on Nov. 10, 1997. This application Jul. 10, 1998, Appl. No. 113,584.

Claims priority, application Spain, Nov. 12, 1996, 9602439

Int. Cl. B65B *55/04;55/12;* **C23C** *14/28;* **A61F** *2/30;* **A61L** *27/02;27/28*

U.S. Cl. 53—425 **10 Claims**



1. A method for improving the osteointegration of an osseous fixing implant comprising:

a) cleaning and passivating the implant through acid attack in an ultrasound bath;

b) introducing the implant and a coating material of $Ca_uP_vH_xO_yC_z$, where subscripts u, v, x, y, and z are natural numbers including zero with variable stoichiometry, into a first vacuum chamber;

c) introducing into the first vacuum chamber an atmosphere used in a deposition process, said atmosphere comprising argon, water vapor, oxygen, or mixtures thereof;

d) irradiating the coating material with ultraviolet photons (λ=193 nm) provided by an ArF excimer laser by introducing into the first vacuum chamber a laser beam through a window in said first chamber, wherein the window is transparent to said beam resulting in application of the coating material onto the implant surface;

e) conveying the implant by means of a vacuum control system to a second vacuum chamber which contains a container;

f) exposing the container and the implant in the second vacuum chamber to ultraviolet radiation to sterilize the container as well as the implant;

g) introducing the implant into the sterilized container; and

h) sealing the container with the implant inside to obtain a sterilized vacuum assembly.

US 6,339,914 B1

PACKAGING MACHINE

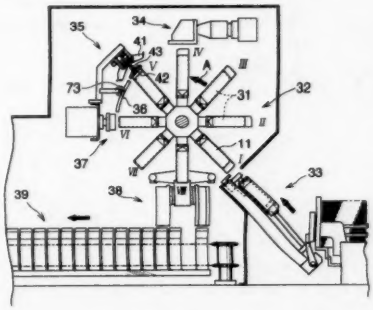
Yasuji Fujikawa; Kazuo Abe, and Michio Ueda, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Oct. 27, 1999, Appl. No. 427,689

Claims priority, application Japan, Oct. 29, 1998, 10-308129

Int. Cl. B65B *43/26*

U.S. Cl. 53—565 **4 Claims**



1. A packaging machine for tubular containers of square to rectangular cross section, each of the containers having a bottom forming portion comprising first to fourth bottom panels continuous with one another, the first bottom panel being formed with a fold forming portion in a center of an outer end thereof for preventing a liquid from permeating the end, the packaging machine comprising:

a rotatably movable body having radially extending mandrels and being intermittently drivable so as to stop each of the mandrels at first and second process stations in succession, the container being fitted around the mandrels with the bottom forming portion projecting radially outwardly therefrom and with the first bottom panel facing to one side orthogonal to the direction of movement of the mandrel,

a bottom breaker for prefolding the bottom forming portion of the container as fitted around a mandrel when stopped at the first process station, including bending the first bottom panel along a basepart thereof toward the other side orthogonal to the direction of movement of the mandrel, so as to render the entire bottom forming portion foldable flat, and for prefolding the fold forming portion by bending the fold forming portion along a base part thereof oppositely to the direction in which the first bottom panel is bent,

a folding rail for guiding the prefolded bottom forming portion of the container fitted around the mandrel from the first process station to the second process station during movement of the mandrel from the first to the second process station while folding the bottom forming portion flat by contact therewith, and

a bottom press for flattening and bonding under pressure the bottom forming portion of the container fitted around the mandrel when stopped at the second process station,

the folding rail comprising a pair of arcuate rail members spaced orthogonally to the direction of movement of the mandrel, said rail members having a clearance formed therebetween for permitting an outer end of the prefolded bottom forming portion of the container fitted around the mandrel to be inserted therein to during the movement of the container from the first to the second process station, and

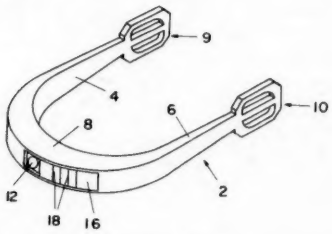
an unfolding preventing guide member for guiding the bottom forming portion so as to prevent the entire prefolded bottom

forming portion including the fold forming portion from unfolding itself to the original state being disposed in the rail clearance so as to come into contact with a straight part comprising the base part of the fold forming portion and extension lines therefrom of the bottom forming portion during movement thereof through the clearance.

US 6,339,915 B1
SPURS

Jayne Elizabeth Bradbury, Rose Cottage, Lycrome Road, Chesham, Buckinghamshire HP5 3LD, United Kingdom

PCT No. PCT/GB98/02813, § 371 Date Mar. 31, 2000, § 102(e) Date Mar. 31, 2000, PCT Pub. No. WO99/17629, PCT Pub. Date Apr. 15, 1999
PCT Filed Sep. 16, 1998, Appl. No. 509,528
Claims priority, application United Kingdom, Oct. 2, 1997, 9720853; Nov. 11, 1997, 9723682
Int. Cl. A43C *17/00*
U.S. Cl. 54—83.1 **15 Claims**

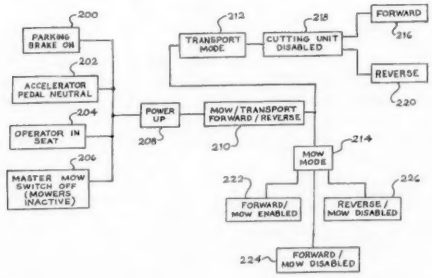


1. A spur assembly comprising a spur body and a spur bit, said spur body including a plurality of spur bit locations, and a cover plate associated with said spur body, wherein said cover plate is operable to cover vacant spur bit locations.

US 6,339,916 B1
METHOD FOR CONSTANT SPEED CONTROL FOR ELECTRIC GREENS MOWER

Terrance G. Benson, Union Grove, Wis., assignor to Textron Inc., Providence, R.I.

Division of application No. 09/008,188, filed on Jan. 16, 1998, now Pat. No. 6,109,009. This application Jul. 7, 2000, Appl. No. 611,574.
Int. Cl. A01D *35/00*
U.S. Cl. 56—10.2 R **6 Claims**

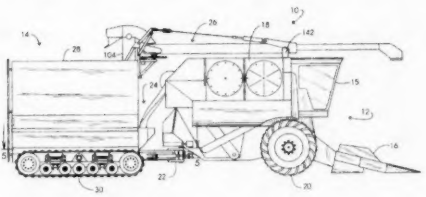


1. A method of providing power to an electrically powered mower comprising the steps of:
placing a key in an ignition;
satisfying preconditions to operation, including:
monitoring power to an acceleration pedal;
notifying a controller if the acceleration pedal is pressed;
providing notification means to an operator if the acceleration pedal is pressed; and
preventing operation of the electrically powered mower if the accelerator is pressed;
providing power to the controller;
sending a signal to the controller indicating the preconditions to operation have been met; and
providing power to an electric motor to drive the electrically powered mower.

US 6,339,917 B1
ARTICULATED COMBINE

Ben N. Dillon, 206 Greensprings Drive, Columbus, Ohio 43235, and Thomas E. Sparrow, 106 Sunset Blvd., Hawley, Minn. 56549

Continuation-in-part of application No. 09/481,046, filed on Jan. 11, 2000, now Pat. No. 6,125,618, which is a division of application No. 09/040,985, filed on Mar. 18, 1998, now Pat. No. 6,012,272. This application May 22, 2000, Appl. No. 575,519.
This patent is subject to a terminal disclaimer.
Int. Cl. A01F *12/46*
U.S. Cl. 56—14.6 **16 Claims**



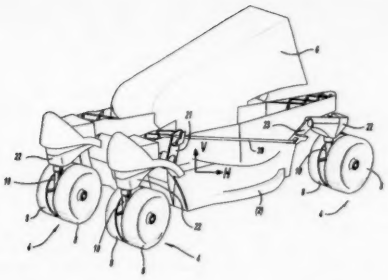
1. A combine having increased on-board grain storage capacity, which comprises:
(a) a forward unit having an operator's cab, an engine, a grain harvesting assembly, a grain transfer assembly, and being devoid of an on-board grain bin; and
(b) a rearward unit attached by a joint to said forward unit and having, a powered wheel assembly, an on-board grain bin for receiving grain from said forward section grain transfer assembly, and a grain off-loading assembly.

US 6,339,918 B1
LAWN MOWER HEIGHT ADJUSTMENT

Roger Thomas, Cleveland, United Kingdom, assignor to Black & Decker Inc., Newark, Del.

Filed Jun. 16, 1999, Appl. No. 334,317
Claims priority, application United Kingdom, Jun. 16, 1998, 9812935
Int. Cl. A01D *34/74*
U.S. Cl. 56—17.2 **10 Claims**

1. A lawn mower comprising:
a cutting deck defining a generally horizontal cutting plane;
first and second wheel assemblies mounting the deck, said first and second wheel assemblies being rotatable about a first and second rod, respectively, each rod having an axis generally perpendicular to said horizontal cutting plane;
the first and second wheel assemblies comprising respectively first and second height adjustment mechanisms;



the first height adjustment mechanism comprising a first pivoting mechanism pivotal about a first axis for moving said first wheel assembly axially with respect to said first rod for adjustment of the height of the deck above the first wheel assembly;

the second height adjustment mechanism comprising a second pivoting mechanism pivotal about a second axis, parallel to the first axis, for moving said second wheel assembly axially with respect to said second rod for adjustment of the height of the deck above the second wheel assembly; and

a connection between the first and second pivoting mechanisms for pivoting the first and second pivoting mechanisms in opposite directions about the first and second axis respectively.

US 6,339,919 B1

RAKE HAVING A GRIPPING MECHANISM

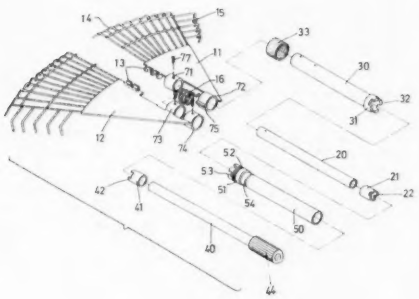
Shih Hao Hsu, P.O. Box 63-99, Taichung 406, Taiwan

Filed Jan. 18, 2000, Appl. No. 488,391

This patent is subject to a terminal disclaimer.

Int. Cl. A01D *7/00*

U.S. Cl. 56—400.2 **2 Claims**



1. A rake comprising:

a sleeve,

a first tine head secured on said sleeve,

a rod rotatably received in said sleeve and including a first end extended out of said sleeve,

a second tine head rotatably engaged on said sleeve and rotatable from an open position to a folded position, said rod being secured to said second tine head for rotating said second tine head relative to said first tine head,

a hand grip secured to said first end of said rod for rotating said rod relative to said sleeve, and

means for biasing said second tine head to said open position.

US 6,339,920 B1

ROTATION-RESISTING WIRE ROPE

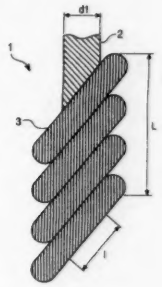
Yasuo Yokoyama, Kurashiki, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Aug. 17, 2000, Appl. No. 639,932

Claims priority, application Japan, Aug. 27, 1999, 11-241663

Int. Cl. D02G *3/02*

U.S. Cl. 57—210 **6 Claims**



1. A rotation-resisting wire rope comprising a core strand, which comprises a plurality of core strand wires laid in a first lay direction, and a plurality of side strands laid around the core strand in a second lay direction opposite to the first lay direction, each side strand comprising side strand wires laid in the first lay direction and the wire rope having a smaller pitch multiple than a pitch multiple of the side strands:

wherein a ratio of a diameter of the core strand to a diameter of the side strands is from about 1.3 to about 1.8.

US 6,339,921 B1

TEXTILE YARN PIECING DEVICE WITH AN EVALUATION ARRANGEMENT FOR DETERMINING PARAMETERS OF AN AUTOMATIC YARN PIECING PROCESS

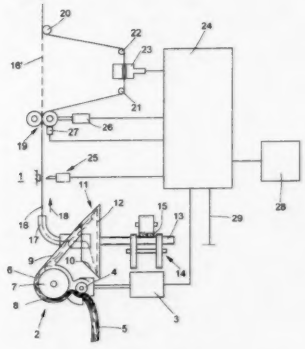
Manfred Lassmann, Nettetal, and Heribert Mertens, Willich, both of Germany, assignors to W. Schlafhorst AG & Co., Germany

Filed Nov. 20, 2000, Appl. No. 716,798

Claims priority, application Germany, Nov. 19, 1999, 199 55 674

Int. Cl. D01H *13/26*

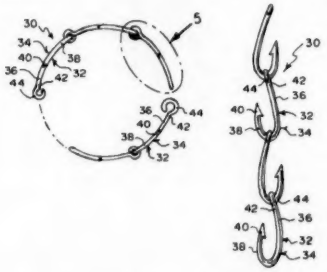
U.S. Cl. 57—264 **7 Claims**



1. A yarn piecing device, comprising an evaluation arrangement for determining parameters of an automatic piecing process, at least one sensor device for measuring yarn diameter and for detecting a location of a measuring point in respect to a yarn piecing, a control device operable initially in a test phase for

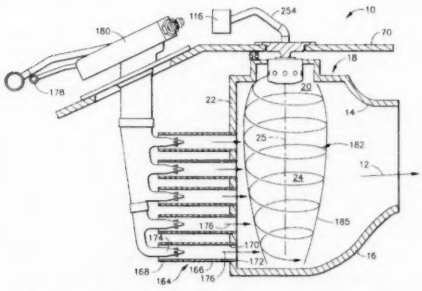
controlling formation of at least one test piecing and controlling subsequent removal of the created test piecing prior to a supplementary delivery of additional fiber, means for determining the length of a thinner extent of the yarn downstream of the test piecing, and means for determining from the detected length of the thinner extent an amount of supplementary delivery of additional fiber required for compensating the thinner extent.

US 6,339,922 B1
JEWELRY CHAIN
Arthur S. Foster, 18 Horseshoe La., Commack, N.Y. 11725
Filed Apr. 19, 2001, Appl. No. 838,374
Int. Cl. F16G *15/00*
U.S. Cl. 59—80 **4 Claims**



1. An improved jewelry chain of a type having a plurality of links, each of which resembling a fish hook and having a shank with one end thereof having a barbed hook thereon and an opposite end thereof having an eyelet thereon which engages the barbed hook of an adjacent link so as to form the chain and the eyelet of each link lies in a first plane and the shank and barbed hook of each link lie in a second plane that is perpendicular to the first plane, said improvement comprising the barbed hook of each link not touching the shank of an associated link so as to be open.

US 6,339,923 B1
FUEL AIR MIXER FOR A RADIAL DOME IN A GAS TURBINE ENGINE COMBUSTOR
Ely E. Halila; Stuart C. Greenfield, both of Cincinnati, Ohio; Paul V. Heberling, Lawrenceburg, Ind.; John D. Bibler, Mason, and John A. Kastl, Lebanon, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Provisional application No. 60/103,652, filed on Oct. 9, 1998,
Provisional application No. 60/103,649, filed on Oct. 9, 1998.
This application Sep. 17, 1999, Appl. No. 398,559.
Int. Cl. F23R *3/30*
U.S. Cl. 60—37.31 **12 Claims**



1. A fuel air mixer for a gas turbine engine combustor having a longitudinal axis therethrough, comprising:

(a) a fuel injection assembly having a first end, a second end, a fuel passage extending therethrough, and a flange portion having a plurality of spaced openings formed therein which extends from said first end, said fuel injection assembly further comprising:

(1) an elongated fuel stem extending from said first end to said second end, said fuel stem including said fuel passage from said first end to said second end;

(2) a fuel inlet in flow communication with said fuel passage in said fuel stem adjacent said first end thereof; and

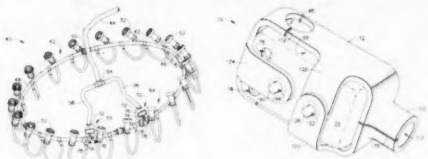
(3) a plurality of fuel injectors in flow communication with said fuel passage in said fuel stem adjacent said second end thereof;

wherein fuel entering said fuel air mixture at said fuel inlet is provided through said fuel stem passage and injected into a combustion zone through said fuel injectors; and

(b) a mixture assembly having a first end, a second end, a cavity formed in a central portion thereof, and a flange portion having a plurality of spaced openings formed therein which extends from said first end;

wherein said mixer assembly is configured to receive said fuel injection assembly in said cavity so that said fuel injection assembly and said mixture assembly are able to be connected to a casing of said combustor by means of said flange portions.

US 6,339,924 B1
METHOD AND APPARATUS FOR ENCAPSULATING GAS TURBINE ENGINE FUEL CONNECTIONS
James Cottrell Hoyer, Cincinnati; Richard Walter Gronostaj, Fairfield, both of Ohio, and Daniel Kelly Baldwin, Ryland Heights, Ky., assignors to General Electric Company, Cincinnati, Ohio
Provisional application No. 60/172,609, filed on Dec. 20, 1999.
This application Jun. 6, 2000, Appl. No. 588,074.
Int. Cl. F02G *3/00*
U.S. Cl. 60—39.02 **20 Claims**



1. A method for encapsulating a fuel manifold assembly coupling in a gas turbine engine using a spray shield, the spray shield including a first portion and a second portion, the first portion sized to receive the second portion in only one orientation, said method comprising the steps of:

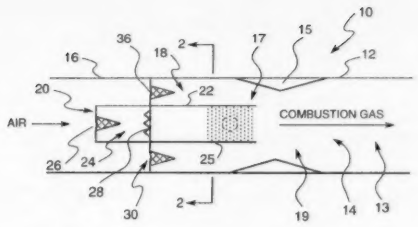
attaching the spray shield second portion around the coupling;

attaching the spray shield first portion around the coupling such that the second portion is received within the first portion and is attached to the first portion.

US 6,339,925 B1
HYBRID CATALYTIC COMBUSTOR
Stephen Lan-Sun Hung, Waterford, N.Y.; Jeffery Alan Lovett, Jupiter, Fla.; Kenneth Winston Beebe, Galway, N.Y.; Martin Bernard Cutrone, Cape Coral, Fla., and Sanjay Marc Correa, Niskayuna, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 2, 1998, Appl. No. 184,684
Int. Cl. F02C *7/228*; **F23R** *3/40*
U.S. Cl. 60—39.06 **20 Claims**

1. A hybrid combustor comprising:

a casing having an air inlet at one end and a chamber at an opposite end;



a first combustor disposed in said casing between said air inlet and said chamber, and including in serial flow communication in a first flowpath a preburner, a first flow duct having a fuel injector therein, and a catalytic reactor;

a second combustor disposed in said casing between said air inlet and said chamber, and including in serial flow communication in a second flowpath a burner and a second flow duct; and

said first and second combustors laterally adjoin each other to position said first and second flowpaths in parallel flow between said air inlet and said chamber

said first combustor further comprises a liner extending axially between said preburner and said catalytic reactor to define said first flow duct adjoining said second combustor; and

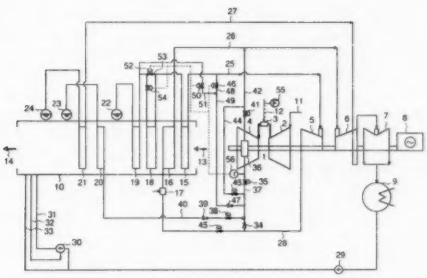
said preburner is disposed at an upstream end of said liner for discharging heated combustion gases into said first flow duct for mixing with fuel from said injector wherein said second combustor surrounds said first combustor.

US 6,339,926 B1

STEAM-COOLED GAS TURBINE COMBINED POWER PLANT

Hiraga Ichiro; Yuichi Iwamoto; Youichi Hattori, and Shinichi Hoizumi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi, Engineering Co., Ltd., Ibaraki, both of Japan

Filed Nov. 19, 1999, Appl. No. 444,561
Claims priority, application Japan, Nov. 20, 1998, 10-347855
Int. Cl. F02C *6/18;7/12;7/18*
U.S. Cl. 60—39.182 **7 Claims**



1. A combined power plant, comprising:

a gas turbine having at least one hot part that is to be cooled with steam;

a multi-pressure heat recovery steam generator generating steam by using exhaust gas from said gas turbine;

a steam turbine using, as a power source, steam generated in said multi-pressure heat recovery steam generator; and

a system for supplying gas turbine cooling duty steam for cooling the hot part of said gas turbine, comprising:

a line, branching off from a steam line for leading high pressure steam turbine exhaust steam from a high pressure section of said steam turbine to a reheater of said multi-pressure heat recovery steam generator, and leading at least a part of the high pressure steam turbine exhaust steam to a gas turbine cooling duty steam supply line;

a line, leading intermediate pressure steam from an intermediate pressure superheater of said multi-pressure heat recovery steam generator to the gas turbine cooling duty steam supply line; and

a line, branching off from a steam line for leading high pressure steam from a high pressure superheater of said multi-pressure heat recovery steam generator to said high pressure steam turbine, and leading a part of the high pressure steam to the gas turbine cooling duty steam supply line, wherein

a temperature lower limit region setting means is provided for setting a lower limit region within an allowable temperature range of gas turbine cooling duty steam for each gas turbine food, said lower limit region having a predetermined range starting from a lower limit of said allowable temperature range, and

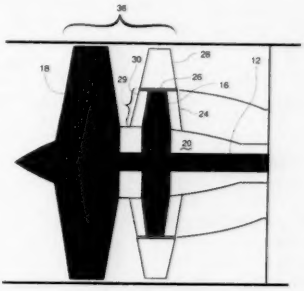
a control means for controlling steam supply, when the gas turbine cooling duty steam enters the lower limit region, so that a part of the high pressure steam of high temperature is supplied to the hot part of said gas turbine to raise the gas turbine cooling duty steam temperatyre so as to be higher than the lower limit region and to fall within the allowable temperature range whereby gas turbine cooling duty steam, the temperature of which is within the allowable temperature range, is supplied to the hot part of said gas turbine.

US 6,339,927 B1

INTEGRATED FAN-CORE TWIN SPOOL COUNTER-ROTATING TURBOFAN GAS TURBINE ENGINE

Anthony L. DiPietro, Jr., Springboro, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of application No. 09/413,053, filed on Oct. 1, 1999. This application May 4, 2001, Appl. No. 849,288.
Int. Cl. F02K *3/072*
U.S. Cl. 60—226.1 **12 Claims**



1. A gas turbine engine, comprising:

(a) a combustion chamber;

(b) a counter-rotating turbine, completely aft of said combustion chamber, including first and second counter rotatable turbine blade row for rotating first and second concentric drive shafts, respectively;

(c) an integrated counter-rotating fan module booster turbocompressor completely forward of said combustion chamber, including a first fan blade row connected to said first drive shaft, and:

(i) first and third booster turbocompressor blade rows connected at their hubs to said second drive shaft, connected at their outer circumferences to a shroud disposed coaxially about a center line of said engine and outwardly of said drive shafts, and to which shroud is attached a second fan blade row radially outwards of said shroud; and,

(ii) a second booster turbocompressor blade row axially spaced between said first and third booster turbocompressor blade row and connected to said first drive shaft, and

(d) a compressor axially positioned between said combustion chamber and said integrated counter-rotating fan module booster turbocompressor, said compressor including a housing, a plurality of compressor stator rows connected to the housing, a plurality of compressor blade rows connected to said second drive shaft such that the first turbine blade row drives said first fan blade row and second booster turbocompressor blade row, wherein said second turbine blade row drives said first and third booster turbocompressor blade rows and said second fan blade row, and the second drive shaft simultaneously drives said plurality of compressor blade rows.

US 6,339,928 B1

SYSTEM FOR CONTROLLING A HYDRAULIC PROPULSION DRIVE

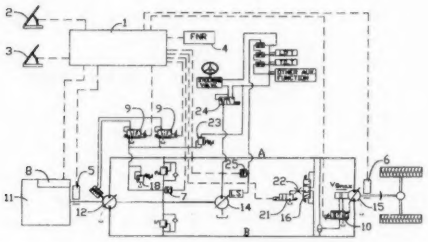
Wilhelm Göllner, Neumünster, Germany, assignor to Sauer-Danfoss Inc., Ames, Iowa

Filed Jun. 29, 2000, Appl. No. 606,719

Claims priority, application Germany, Jun. 30, 1999, 199 30 056

Int. Cl. F16D *31/02*

U.S. Cl. 60—464 **8 Claims**



1. A system for controlling a hydraulic propulsion drive in a vehicle comprising:

an engine;

a variable displacement pump for displacing hydraulic fluid controlled by activation valves connected thereto, the variable displacement pump being driven by the engine;

a hydraulic motor connected to the variable displacement pump in a closed hydraulic circuit by a feed line and a return line and being adapted to supply rotational energy to drive the vehicle;

an electrically controlled flush valve operatively associated with the closed circuit and connectable with the return line;

an electrical control for automatically controlling the flush valve as a function of a sensed temperature of the hydraulic fluid in the variable displacement pump;

a sensor connected to the electrical control and the variable displacement pump for sensing the temperature of the hydraulic fluid in the variable displacement pump.

US 6,339,929 B1

SWIVEL CONTROL APPARATUS

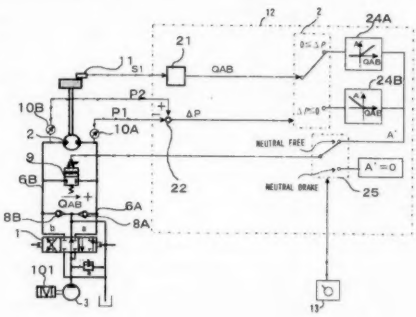
Tsutomu Udagawa; Teruo Igarashi, both of Ibaraki; Masami Ochiai, Atsugi; Toshimi Sakai, Ibaraki; Kazuhisa Ishida, Tsuchiura, and Kouji Funato, Ibaraki, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Continuation of application No. PCT/JP99/06606, filed on Nov. 26, 1999. This application Jul. 25, 2000, Appl. No. 625,416.

Claims priority, application Japan, Nov. 27, 1998, 10-337559

Int. Cl. F16D *31/02*

U.S. Cl. 60—468 **8 Claims**



1. A swivel control apparatus, comprising:

a hydraulic pump;

a hydraulic motor for swiveling which is driven by hydraulic oil emitted from said hydraulic pump;

a control valve which controls a flow of hydraulic oil which is supplied from said hydraulic pump to said hydraulic motor for swiveling, and at a neutral position of the control valve cuts off from one another a pair of ports which communicate to input and output ports of said hydraulic motor;

a valve device which communicates and cuts off from one another a pair of conduits which are respectively connected to the input and output ports of said hydraulic motor for swiveling;

a pressure detection device which detects respective pressures in said two conduits and outputs pressure signals;

a rotational speed detection device which detects a physical quantity based upon a rotational speed of said hydraulic motor for swiveling and outputs a rotational speed signal;

a mode selection device which selects a neutral brake mode and a neutral free mode; and

a control device which controls driving of said valve device so as to cut off said two conduits from one another when said neutral brake mode is selected, and so as to communicate said two conduits based upon said pressure signals and said rotational speed signal when said neutral free mode is selected.

US 6,339,930 B2

ICE THICKNESS CONTROL SYSTEM AND SENSOR PROBE FOR ICE-MAKING MACHINES

Leonard I. Horey, Shelton, Conn., assignor to Technology Licensing Corporation, Tequesta, Fla.

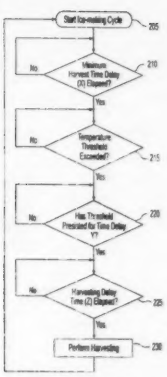
Division of application No. 09/561,882, filed on May 1, 2000, now abandoned. This application Jun. 25, 2001, Appl. No. 888,467.

Int. Cl. F25C *1/12*

U.S. Cl. 62—73 **12 Claims**

1. An ice-making machine comprising:

a cold element, including an ice-forming surface which may be cooled to below the freezing point of water;



a water source which provides water to the ice-forming surface such that a thickness of ice forms on the surface during an ice-making cycle;

a temperature sensor; and

control logic associated with the sensor for detecting when ice formed on the cold surface is to be harvested, the control logic comprising:

a temperature signal threshold value which indicates when the thickness of ice is sufficiently close to the sensor such that it can be harvested;

circuitry being operative to sense the temperature signal from the sensor;

circuitry for determining that the temperature signal has consistently remained above the threshold value for a threshold persistence time duration since the temperature signal first exceeded the threshold value; and

circuitry for initiating a harvesting cycle, during which the ice is removed from the ice-making surface.

US 6,339,931 B1

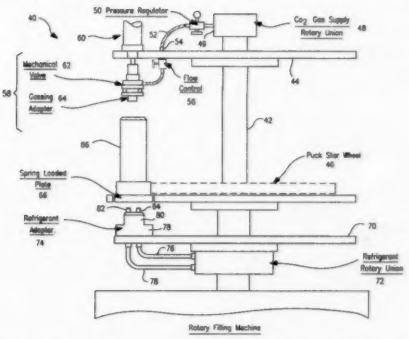
METHOD FOR CHARGING A SELF-CHILLING BEVERAGE CAN

David Cull, St. Charles, Ill., assignor to Penguin Plastics Inc., Rolling Meadows, Ill.

Filed May 30, 2000, Appl. No. 580,135

Int. Cl. F25B *45/00*

U.S. Cl. 62—77 **8 Claims**



1. A method for charging of a heat exchange unit for a self-chilling container, wherein the self-chilling container includes an outer tubular member, an inner heat exchange unit that includes an inner closed end tubular container, and a volume therebetween for the containment of a consumable material, the inner heat exchange unit further including a closure and coolant release valve structure connected to an open end of the closed end tubular container, opposite the closed end of the closed end tubular container, the inner heat exchange unit further including a first heat exchange medium disposed in the closed end tubular container and operably configured for absorbing, under pressure, a second heat exchange medium, whereupon actuation of the closure and coolant release valve structure, the second heat exchange medium is released in gaseous form from the inner heat exchange unit, resulting in a release of heat from the inner heat exchange unit, so that heat is transferred from the consumable material into the inner heat exchange unit, the method comprising:

providing a filling machine, having at least one filling head operably connected to a source of second heat exchange medium;

the filling machine further having at least one refrigerant adapter operably connected to a source of refrigerant material;

inserting the partially constructed self-chilling container structure into the filling machine;

supplying refrigerant to the at least one refrigerant adapter, operably configured to deliver refrigerant into the partially constructed self-chilling container, to substantially surround the inner heat exchange unit,

positioning a filling head in juxtaposed relation to the closure and coolant release valve structure of the partially constructed self-chilling container;

supplying second heat exchange medium to the inner heat exchange unit of the partially constructed self-chilling can to at least partially charge the inner heat exchange unit.

US 6,339,932 B1

REFRIGERATING CYCLE USING CARBON DIOXIDE AS REFRIGERANT

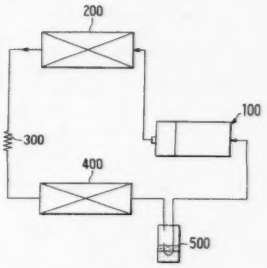
Motohiro Yamaguchi, Hoi-gun; Toshinobu Takasaki, Chita, and Shin Nishida, Mishima, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Aug. 23, 2000, Appl. No. 644,330

Claims priority, application Japan, Aug. 23, 1999, 11-235693

Int. Cl. F25B *41/00*

U.S. Cl. 62—114 **6 Claims**



1. A refrigerating cycle comprising:

a hermetic electric compressor for sucking and compressing refrigerant therein, the hermetic electric compressor including a hermetic housing holding an electric motor in which the refrigerant flows, the refrigerant being composed of carbon dioxide;

a radiator for cooling the refrigerant discharged from the hermetic electric compressor;

a pressure-reducing unit for decompressing the refrigerant discharged from the radiator;

an evaporator for evaporating the refrigerant decompressed by the pressure-reducing unit; and

an accumulator for separating the refrigerant discharged from the evaporator into a liquid phase refrigerant and a gaseous phase refrigerant while separating a lubricating oil for the compressor from the refrigerant, and for conducting the gaseous phase refrigerant and the lubricating oil toward the hermetic electric compressor,

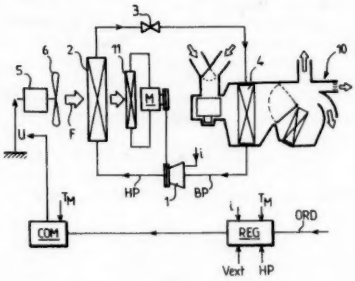
wherein the lubricating oil contains polyalkylene glycol as a main component.

US 6,339,933 B2

DEVICE FOR AIR CONDITIONING A MOTOR-VEHICLE PASSENGER COMPARTMENT, WITH IMPROVED VENTILATION CONTROL

Bruno Hamery, Paris, and Jin Ming Liu, Conflans S/Honorine, both of France, assignors to Valeo Climatisation, La Verriere, France

Filed Dec. 19, 2000, Appl. No. 739,301
Claims priority, application France, Dec. 20, 1999, 99 16081
Int. Cl. F25B *39/04;* **B60H** *1/32*
U.S. Cl. 62—133 **11 Claims**



1. A device for air conditioning a motor-vehicle passenger compartment, comprising an air-conditioning loop traversed by a refrigerant fluid, a compressor and a condenser, the condenser being intended to be traversed by an airflow which is produced, at least in part, by a motor-driven fan unit powered electrically via a control module, and further including: means for recording a parameter representative of an air throughput passing over the condenser, the said air throughput comprising or not comprising the air throughput produced by the motor-driven fan unit, and a regulation module, suitable for interacting with the said means and capable of estimating a maximum value for the electrical power supply to the motor-driven fan unit, for a given air throughput and for a given cooling power of the air-conditioning loop, which corresponds to a predetermined, high-pressure value of the refrigerant fluid at the outlet from the compressor, wherein the regulation module is configured to co-operate with the control module in order to limit the electrical power supply to the motor-driven fan unit substantially to the said maximum value, as a function of the air throughput and of the high-pressure value at the outlet from the compressor.

US 6,339,934 B1

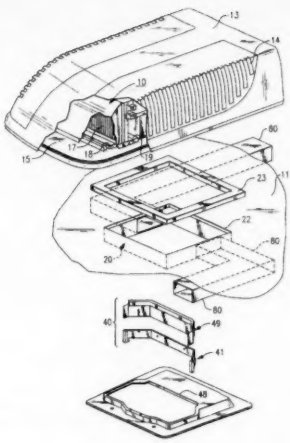
MOUNTING APPARATUS FOR VEHICULAR ROOFTOP AIR CONDITIONER

Kyung-Hwan Yoon, Seoul; Jang-Jai Lee, and Young-Kill Ahn, both of Kwangju, all of Rep. of Korea, assignors to Carrier Corporation, Farmington, Conn.

Filed Apr. 11, 2000, Appl. No. 547,257
Int. Cl. B60H *1/32*
U.S. Cl. 62—244 **7 Claims**

1. Apparatus for installing an air conditioning unit having a return air inlet and a supply air outlet upon the roof of a vehicle that includes

a mounting frame located within an opening in the roof of a vehicle whereby the frame extends into the comfort region of said vehicle, means for supporting an air conditioning unit upon the top of said frame so that the return air inlet and supply air outlet are in fluid flow communication with the interior of said frame,



a floor panel enclosing said bottom of said frame,

a partition extending across the width of said frame for dividing the frame into a return air compartment that communicates with the return air inlet of said air conditioning unit and a supply air compartment that communicates with the supply air outlet of said air conditioning unit,

said partition further including a stationary base that is mounted in an upright position upon said floor panel and which extends between two side walls of said frame, and a movable top plate slidably retained upon said base for movement in a vertical direction, said top plate being arranged to close against said air conditioning unit between the return air inlet and the supply air outlet,

said means mounted upon said partition for preventing air from moving across said partition between compartments, and

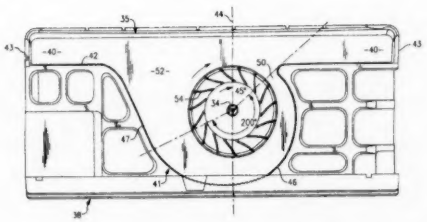
means for placing each frame compartment in further communication with the interior comfort region of said vehicle.

US 6,339,935 B1

EVAPORATOR SCROLL FOR BLOWER WHEEL

Stephen L. Moretti, Auburn, and Peter R. Bushnell, Cazenovia, both of N.Y., assignors to Carrier Corporation, Farmington, Conn.

Filed May 16, 2001, Appl. No. 859,026
Int. Cl. F25D *23/12*
U.S. Cl. 62—262 **16 Claims**



1. Apparatus for radially distributing the flow leaving a centrifugal blower wheel that includes:

a housing having a vertical front wall and a spaced apart vertical rear wall, said housing further including a blind opening passing inwardly through the front wall, so that the walls of the opening are perpendicular to the rear wall of the housing;

said opening containing an upper section that extends horizontally across said housing and a volute shaped lower section that opens into the upper section through a bottom wall of said upper section;

a blower wheel having radial or rearwardly curved blades mounted for rotation in said lower section of the opening about a horizontal axis;

said lower section of the housing opening containing a spiral shaped wall having a proximal end and a distal end, said proximal end of said spiral wall intersecting the bottom wall of said upper section adjacent to said blower wheel to form a restricted cutoff region between the blower wheel and the lower section of the opening, said spiral being centered about on the axis of said blower wheel and increasing from cutoff region through about 200° of arc to the distal end of said spiral wall, and

an inclined wall that is tangent to the spiral wall at the distal end thereof, said inclined wall passing upwardly to intersect the bottom wall of said upper section of said opening to form an expanded exit region between the upper and lower sections of the opening.

US 6,339,936 B1

PHASE-CHANGEABLE AND NON-HEAT REFRIGERATION PROCESS AND APPARATUS THEREOF

Yuanming Yi, 51 Jiangwan Xin Chun, Li Ling City, Human Province, China, 412200

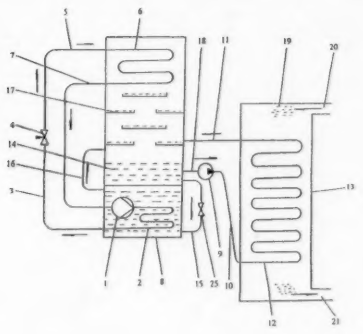
PCT No. PCT/CN98/00253, § 371 Date Apr. 26, 2000, § 102(e) Date Apr. 26, 2000, PCT Pub. No. WO99/22187, PCT Pub. Date May 6, 1999

PCT Filed Oct. 23, 1998, Appl. No. 530,348

Claims priority, application China, Oct. 27, 1997, 97119920

Int. Cl. F25B *7/00*

U.S. Cl. 62—335 **5 Claims**



1. A PPT&H refrigerating process, the first-stage refrigeration of which comprises evaporation for vaporization of the liquid-state refrigerant, release of latent heat in vaporization, and generation of refrigerating effect, with the generated vapor compressed into gases of higher temperature, cooled down through heat exhaustion and temperature reduction and condensed into liquid-state medium, which is subjected to further cooling down after flow restriction, followed by reabsorption of heat to refrigerate through evaporization and then suction out of vapor and reduction of the vapor pressure to bring the evaporation temperature to the setting value, comprising:

a system, comprising a phase-transformation multistage refrigeration cycle of more-than-two stages composed of a first and a final-stage refrigeration cycle;

a refrigerating compressor for compressing vapor of the first stage to perform a refrigeration cycle and a condenser are immersed in the liquid-state refrigerant of the next stage to have the generated heat all absorbed by the vaporizing latent heat of the liquid-state refrigerant of the next stage;

wherein the temperature difference between the temperature for refrigeration evaporation in the first refrigeration cycle and that of condensing environment is reduced to a value suitable for the first-stage refrigeration cycle to achieve normal refrigeration;

a plurality of phase transformation cycles to refrigerate by cooling means; wherein said plurality of phase transformation cycles utilize the lower temperature cooling provided by the refrigeration cycle of the preceding stage to lower the temperature of and condense the vapor generated after refrigeration by phase transformation of the refrigerant of the current stage so as to recover the medium into liquid state, implementing the refrigeration cycle by cooling means;

wherein each of said plurality of phase-transformation cycles, the vapor is first condensed into a liquid-state overcooled medium, which is flowing downwardly in layers, with heat being exchanged in a convection manner with the vapor incessantly entering from below and blowing up in layers, the vapor eventually turning into complete liquid-state medium of the approximate saturation point, reducing the cooling dissipated during evaporation of the condensate to a minimum;

wherein during the same stage of the cycle, the cooling provided by phase transformation of the refrigerant is much more larger in amount than that dissipated in vapor liquefaction;

wherein the refrigeration cycle in the final stage is done with the refrigerating effect, and the cool the cycle produces is supplied externally; and

wherein the evaporation temperature of the refrigerant in each refrigeration cycle rises stage by stage according to the connecting sequences of the system, with that of the refrigerant in the first stage being low, and that in the final stage being high.

US 6,339,937 B1

REFRIGERANT EVAPORATOR

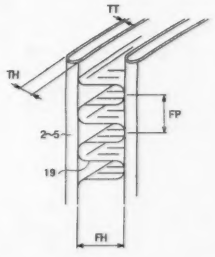
Masamichi Makihara, Gamagori; Isao Kuroyanagi, Anjo; Toshiya Nagasawa, Obu, and Eiichi Torigoe, Anjo, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed May 18, 2000, Appl. No. 573,241

Claims priority, application Japan, Jun. 4, 1999, 11-158424; Jul. 9, 1999, 11-196346; Mar. 9, 2000, 12-071059

Int. Cl. F25B *43/00*

U.S. Cl. 62—503 **20 Claims**



1. An evaporator for performing heat exchange between refrigerant and air, comprising:

a plurality of tubes through which refrigerant flows, the tubes being made of an aluminum material and being arranged in parallel with each other in a laminating direction perpendicular to a flow direction of air; and

a plurality of corrugated fins made of an aluminum material, each of which is disposed between adjacent tubes to increase a heat-conductive area of air passing through between the tubes, wherein:

the tubes have a tube plate thickness TT being in a range of 0.10 mm–0.35 mm; and

each of the tubes has a tube height TH in the laminating direction, the tube height TH being in a range of 1.5 mm–3.0 mm.

US 6,339,938 B1

APPARATUS AND PROCESS FOR SEPARATING AIR BY CRYOGENIC DISTILLATION

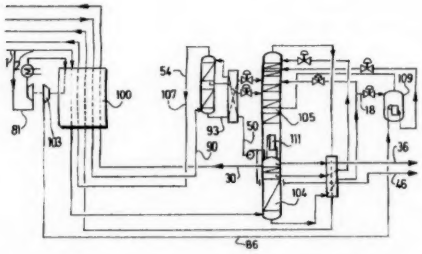
Francois De Bussy, Paris, and Frederic Judas, Chatenay-Malabry, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Jun. 22, 2000, Appl. No. 599,407

Claims priority, application France, Jun. 22, 1999, 99 07931

Int. Cl. F25J *3/00*

U.S. Cl. 62—643 **19 Claims**



1. Air separation apparatus comprising a column system comprising at least one double column comprising a medium-pressure column (**104**) and a low-pressure column (**105**) which are thermally linked to each other by a first reboiler/condenser (**111**) where the gas at the top of the medium-pressure column condenses, means for sending compressed and purified air to a heat exchanger (**100**) where it cools, means (**2**) for sending cooled air to the medium-pressure column in gas form, means for sending an oxygen-enriched fluid from the medium-pressure column to the low-pressure column where it is separated by cryogenic distillation, means for sending a nitrogen-enriched fluid from the medium-pressure column to the low-pressure column, means for withdrawing a nitrogen-rich fluid and an oxygen-rich fluid from the low-pressure column, a second reboiler/condenser (**109**), means (**86**) for sending air to the second reboiler/condenser where it condenses at least partially, and means for sending the at least partially condensed air to the low-pressure column, means (**18**) for sending a liquid from the low-pressure column or from the medium-pressure column or from another column (**107**) of the column system to the second reboiler/condenser, characterized in that the liquid (**18**) sent to the second reboiler/condenser contains between 22 and 70 mol % of oxygen and in that the at least partially condensed air sent to the column system comprises the only stream of liquefied air sent to the column system.

US 6,339,939 B1

PROCESS FOR THE CONVERSION OF A FLOW CONTAINING HYDROCARBONS BY PARTIAL OXIDATION

Zhijie Chen, Creteil, France, assignor to L'Air Liquide, and Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, both of Paris Cedex, France

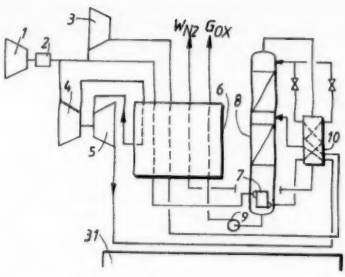
Division of application No. 09/134,671, filed on Aug. 14, 1998, now Pat. No. 6,110,980. This application May 10, 2000, Appl. No. 568,140.

Claims priority, application France, Aug. 14, 1997, 97 10400

Int. Cl. F25J *3/00*

U.S. Cl. 62—646 **9 Claims**

1. Plant for the separation of air by cryogenic distillation, comprising,



a single column,

means for feeding the single column with air,

a boiler at the base of the single column,

means for sending a heating fluid to the boiler,

means for drawing off an oxygen-enriched liquid from the base of the single column,

means for pressurizing at least some of the liquid,

means for vaporizing at least some of the pressurized liquid by heat exchange with compressed nitrogen, and

a turbine with a turbine outlet, the turbine outlet being connected to the boiler,

wherein the heating fluid is air.

US 6,339,940 B1

SYNTHETIC QUARTZ GLASS MANUFACTURING PROCESS

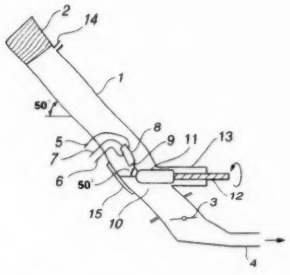
Motoyuki Yamada; Hisatoshi Otsuka, and Koji Matsuo, all of Nakakubiki-gun, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 20, 2000, Appl. No. 553,392

Claims priority, application Japan, Apr. 21, 1999, 11-113672

Int. Cl. C03B *19/06*

U.S. Cl. 65—17.4 **10 Claims**



1. A process for manufacturing synthetic quartz glass comprising the steps of:

feeding a quartz glass-forming raw material to a high-temperature gas zone within a chamber,

converting the quartz glass-forming raw material into quartz soot,

forming synthetic quartz glass from the soot, and

flowing a gas through the chamber in the vicinity of the high-temperature gas zone for discharging suspended soot in a direction, the discharging gas being flow-straightened in the suspended soot discharging direction,

wherein a stream of high-temperature gas flows through the high-temperature gas zone in a direction, the angle at which the high-temperature gas stream impinges upon an ingot relative to the axial direction of the ingot is within 0–70 degrees, and the flow-straightened suspended soot-discharging gas flows through the chamber in the vicinity of the high-temperature gas zone in a direction within 15

degrees relative to the flow direction of the high-temperature gas stream.

US 6,339,941 B1

DEVICE FOR COOLING GLASS VOLUMES

Carsten Bremer, Chalon sur Saone, France, assignor to Saint-Gobain Glass France, Courbevoie, France

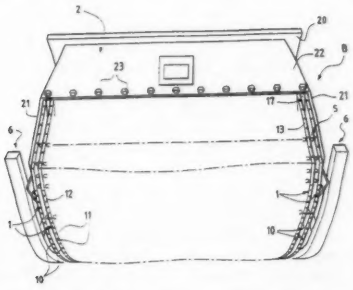
PCT No. PCT/FR98/01990, § 371 Date Aug. 23, 1999, § 102(e) Date Aug. 23, 1999, PCT Pub. No. WO99/15469, PCT Pub. Date Apr. 1, 1999

PCT Filed Sep. 17, 1998, Appl. No. 308,217

Claims priority, application France, Sep. 19, 1997, 97/11717

Int. Cl. C03B *27/048*

U.S. Cl. 65—355 **21 Claims**



1. A chest for cooling and tempering glass plates, said chest comprising nozzles forming a blowing zone, and a rigid support associated with at least one panel on which the nozzles are fixed, wherein each nozzle comprises two flanges having peripheral sides, a top, and a bottom and a strap perforated with blow holes, each of the flanges are of one-piece construction, and are provided with tabs located on the peripheral sides, the peripheral side tabs are folded toward and overlappingly engage the neighboring peripheral side tabs on the neighboring flange, and the flanges are fixed to each other along the peripheral sides and the strap is fixed to the top of the flanges by riveting and/or interposition of a cement thereby forming a nozzle, the bottom of the flanges connect the nozzles to the rigid support to form the chest.

US 6,339,942 B1

COMPOUND NEEDLE WITH ASYMMETRICALLY DIVIDED CLOSING ELEMENT

Sigmar Majer, Balingen, Germany; Bernhard Schuler, deceased, late of Sonnenbühl-Erpfingen, Germany, by Ursula Schuler, legal representative; Kurt Wiedenhöfer, Albstadt, Germany; Toshiaki Morita, and Kenji Kitahara, both of Wakayama, Japan, assignors to Groz-Beckert KG, Albstadt, Germany, and Shima Seiki Manufacturing Ltd., Wakayama, Japan

Filed Oct. 18, 2000, Appl. No. 690,740

Claims priority, application Germany, Oct. 18, 1999, 199 50 259

Int. Cl. D04B *35/06*

U.S. Cl. 66—120 **15 Claims**

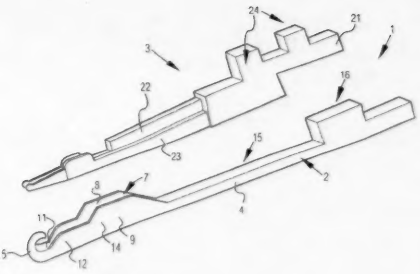
1. A compound needle for knitting machines comprising

(a) a needle member having a longitudinal direction;

(b) a closing element channel formed on said needle member;

(c) a closing element arranged longitudinally displaceably in said closing element channel and including a fastening location; and

(d) two closing element springs extending through said closing element channel and being secured to said closing element at said fastening location; said closing element springs being asymmetrical relative to each other at least along portions



thereof that extend through said closing element channel; said closing element springs having

(1) web sections extending outward from said fastening location; and

(2) guide sections constituting respective continuations of said web sections; said guide sections being offset relative to one another with respect to said longitudinal direction.

US 6,339,943 B2

DEVICE AND METHOD FOR ADJUSTING HOSIERY TENSION IN CIRCULAR TEXTILE MACHINES

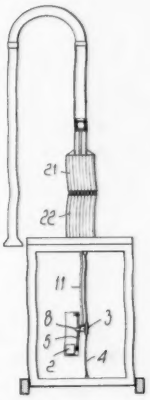
Giovanni Bertini, Firenze; Paolo Brandani, Scandicci, and Daniele Vivoli, Firenze, all of Italy, assignors to Matec S.p.A., Scandicci, Italy

Filed Jan. 22, 2001, Appl. No. 766,827

Claims priority, application Italy, Feb. 1, 2000, MI00A0149

Int. Cl. D04B *15/88*

U.S. Cl. 66—149 R **14 Claims**



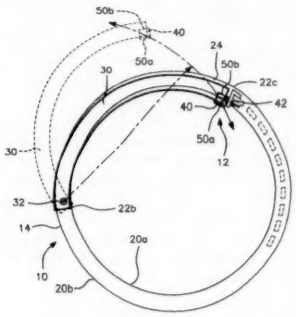
1. A device for an electronic adjustment of hosiery tension in circular textile machines, comprising: a carriage; actuation means for moving said carriage with a translatory motion along an axis which is parallel to a diametrical axis of said circular textile machine; at least one transducer supported at said carriage; a hosiery advancement device to which said transducer is connected, said transducer being adapted to detect a contrasting force due to an advancement of a hosiery item being knit; and controller means for processing information related to said contrasting force and emitting a speed signal for said actuation means, in order to adjust a movement speed of said carriage in contrast with said contrasting force.

US 6,339,944 B1

LOCKING MECHANISM FOR TRASH CAN RECEPTACLE AND OTHER DOORS

Gerald P. Skalka, Potomac, Md., assignor to Victor Stanley, Inc., Dunkirk, Md.

Filed May 10, 2000, Appl. No. 568,157
Int. Cl. B65F *1/12*
U.S. Cl. 70—63 **22 Claims**



1. A locking mechanism having a locked and an unlocked condition, comprising:

a housing assembly and a pin assembly movable relative to each other between open and closed positions;

the housing assembly including:

a housing having closed interior and exterior faces, closed top and bottom faces, an open side face facing the pin assembly, and a closed side face opposite the open side face;

a flapper plate pivotably mounted on a horizontal axis between the interior and exterior faces of the housing, the flapper plate having a free edge and having a length whereby it can be pivoted upwards to bring the free edge toward the closed side face without contacting the closed side face; and

means for pivoting the flapper plate upwards to bring the free edge toward the closed side face; and

the pin assembly including:

a faceplate portion configured to cover at least a portion of the open side face of the housing; and

a pin extending substantially perpendicularly from the faceplate portion towards the interior of the housing and positioned so as to extend into the interior of the housing and contact the flapper plate with the hook engaging the free end of the flapper plate when the housing assembly and the pin assembly are in the closed position.

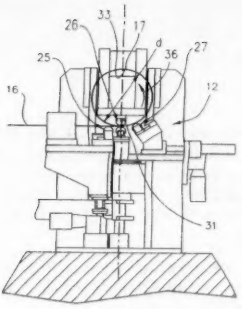
US 6,339,945 B2

APPARATUS FOR FORMING TAPERED SPIRAL TUBES

Robert E. Miller; James A. Marquis, both of Lafayette, and Paul K. Davis, Auburn, all of Calif., assignors to Pacific Roller Die Co., Inc., Hayward, Calif.

Continuation of application No. 09/013,171, filed on Jan. 27, 1998. This application May 3, 2001, Appl. No. 848,837.
Int. Cl. B21C *37/12*
U.S. Cl. 72—49 **7 Claims**

2. Apparatus for forming tapered spiral tubes from metal strips, comprising: a tube forming system for forming a metal strip into a spiral tube, the tube forming system comprising cooperating articulated lead roll, articulated buttress roll and mandrel roll; the lead roll, buttress roll and mandrel roll being free-rotating; a strip infeed system for feeding a metal strip of substantially constant width to the lead roll of the tube forming system; the strip infeed system and the tube forming system being oriented at an angle Θ therebetween; the strip infeed system being mounted on wheels for pivotal



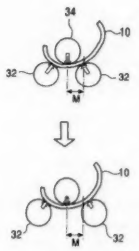
movement relative to the tube forming system to vary the angle Θ; a motor drive system operatively connected to the strip infeed system for effecting said pivotal movement; and a computer system operatively connected to the motor drive system for operating the motor drive system to selectively vary the angle Θ sinusoidally to linearly vary the diameter of a spiral tube being formed from the metal strip by the tube forming system.

US 6,339,946 B1

PIPE FORMING APPARATUS AND METHOD

Michio Yamashita; Hideo Abe; Yoshiharu Daikuzono; Shingo Emi, and Nobuo Tomizawa, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Nov. 4, 1999, Appl. No. 433,968
Claims priority, application Japan, Nov. 4, 1998, 10-313206; Nov. 4, 1998, 10-313207; Nov. 4, 1998, 10-313208
Int. Cl. B21D *5/14*
U.S. Cl. 72—173 **10 Claims**



1. A pipe forming apparatus comprising a pair of bending rolls arranged to work one side of a sheet of feed material, and a counter roll arranged to work the other side of said sheet, said apparatus further comprising:

a roll spacing setting device adapted to set the roll spacing of the pair of rolls to a value greater than the sum of the diameter of said counter roll and the diameter of one of said pair of rolls such that the spacing L of the pair of rolls satisfies the following expression:

$$(Dp+Dwl)>L\geqq 0.85(Dp+Dwl)$$

wherein Dp represents the outside diameter of the product pipe and Dwl represents the diameter of one of the pair of rolls; and

a tightening amount setting device adapted to set the amount of movement of said counter roll relative to said pair of rolls to a value greater than the radius of one of said pair of rolls.

US 6,339,947 B1

ROTARY APPARATUS WITH MOVEABLE DIE

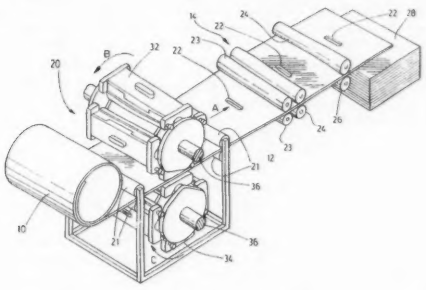
Ernest Robert Bodnar, Don Mills, Canada, assignor to Rotary Press Systems, Inc., Toronto, Canada

Continuation of application No. 09/132,019, filed on Aug. 10, 1998, now Pat. No. 5,983,693, and a division of application No. 08/403,732, filed on Mar. 15, 1995, now Pat. No. 5,791,185. This application Nov. 15, 1999, Appl. No. 440,559.

Claims priority, application Canada, Oct. 2, 1992, 2079721

Int. Cl. B21D *37/12*

U.S. Cl. 72—190 **17 Claims**



1. A rotary apparatus for rotary forming of a web workpiece as it moves in a web feed direction, said rotary apparatus comprising:

a rotatable first roll unit and corresponding co-operable rotatable second roll unit mountable on opposite sides of the web and having axes of rotation parallel to each other and perpendicular to said web feed direction;

a first die support member pivotally carried by said first roll unit in a controlled angular orientation relative to the web;

a second die support member pivotally carried by said second roll unit in a controlled angular orientation relative to the web, and wherein each said die support member includes a first part carried by its respective roll unit and a second part having a platen surface for mounting a die thereto, the second part being mounted on the first part, the second part being linearly reciprocally movable relative to the first part in the direction of movement of the web workpiece during forming thereof.

US 6,339,948 B1

PROCESS OF FORMING ANNULAR MEMBER FROM CYLINDRICAL MEMBER HAVING RADIAL FLANGE AT ONE END

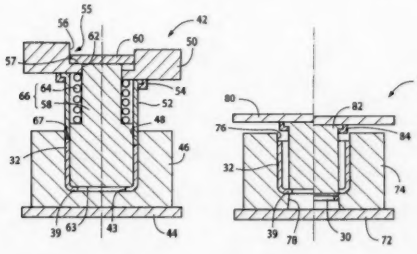
Takashi Suzumura, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 1, 2000, Appl. No. 654,453

Claims priority, application Japan, Sep. 1, 1999, 11-246997

Int. Cl. B21D *53/16*

U.S. Cl. 72—334 **12 Claims**



1. A process of forming at least one annular member from a tubular cylindrical member, comprising:

a force applying step of applying a force to said tubular cylindrical member in an axial direction thereof, to thereby cause plastic deformation at one of opposite axial end portions of said tubular cylindrical member, such that a flange extends in a generally radial direction from one of opposite axial ends of said tubular cylindrical member which corresponds to said one of said opposite axial end portions; and

a shearing step of effecting a shearing operation on said flange to punch out said annular member,

wherein said tubular cylindrical member is fixed to a die having a die hole during implementation of said force applying step such that said tubular cylindrical member is held in contact in said one of the opposite axial ends with a bottom surface of said die hole, whereby said force is applied to said tubular cylindrical member by a punch which is moved in said axial direction relative to said die so as to be brought into abutting contact with the other of said opposite axial ends, while said tubular cylindrical member is held in said flange by a pressure member which has an end face brought into contact with said flange and which forces said flange onto said bottom surface of said die hole, said pressure member being movable in said axial direction relative to said punch so that a spacing distance between said end face of said pressure member and said bottom surface of said die hole is held substantially unchanged during movement of said punch relative to said die in said axial direction, for thereby permitting said flange to extend in said generally radial direction while keeping a thickness of said flange substantially constant.

US 6,339,949 B1

DEEP DRAWING METHOD

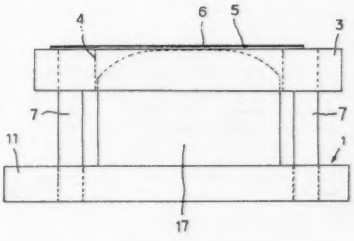
Tutomu Takamatu, 1749-12, Yazuka-machi, Soka-shi, Saitama-ken, Japan

Filed Jul. 17, 2000, Appl. No. 620,205

Claims priority, application Japan, Jul. 30, 1999, 11-216149; Jun. 16, 2000, 12-181477

Int. Cl. B21D *22/00*

U.S. Cl. 72—347 **27 Claims**



1. A method for deep drawing a plate, comprising:

contacting a plate with a male forming portion of a male die that is movable relative to a female die having a female forming portion;

placing plural superposed films on said plate; and

with said plate in contact with said male forming portion, moving said female die relative to said male die such that said male forming portion and said female forming portion cooperate with one another to deform said plate, wherein said plural superposed films are freely movable relative to one another during the cooperation of said male forming portion and said female forming portion.

US 6,339,950 B1

PROCESS FOR DETERMINING THE NUMBER OF COMPONENTS IN PEAKS, BANDS, AND SIGNALS OF CHROMATOGRAMS, ELECTROGRAMS, AND SPECTROGRAMS

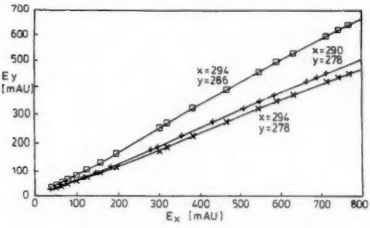
Eberhard Bengsch, Munich; Jürgen Polster, Freising, and Antonius Kettrup, Arnsberg, all of Germany, assignors to GSF Foschungszentrum für Umwelt und Gesundheit GmbH, Oberschleissheim, Germany

Continuation-in-part of application No. PCT/EP98/03272, filed on Jun. 2, 1998. This application Dec. 29, 1999, Appl. No. 474,212.

Claims priority, application Germany, Jun. 30, 1997, 197 27 879

Int. Cl. B01D *15/00;* **G01N** *21/25;30/02*

U.S. Cl. 73—23.36 **7 Claims**



1. A process for determining the number of components involved in the formation of peaks, bands and signals which for purposes of analysis and substance separation, are obtained in spectrograms, where energy correlated measurement values increase as a function of an evolving parameter, and again decrease, said process comprising the following steps:

a) determining four different energy-correlated measurement values with at least three evolving parameter values,

b) forming three differences from the respective four energy-correlated measurement values which belong to the same evolving parameter,

c)forming two quotients from the respective three differences, and

d) plotting the two quotients, one over the other, in a diagram whereby a point is obtained if there is only one component, a straight line is obtained if there are two components, and a curve is formed if there are more than two components responsible for the formation of the peaks, bands or signals.

US 6,339,951 B1

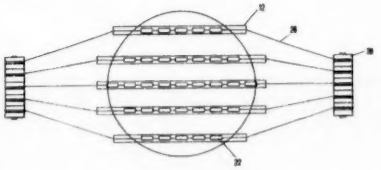
LEAK DETECTION AND STRUCTURAL ASSESSMENT

Ray Reza Kashmiri, Albuquerque; George H. Kitchen, III, Rio Rancho, and Manuel Johnny Peck, Albuquerque, all of N. Mex., assignors to International Lubrication & Fuel Consultants, Inc., Rio Rancho, N. Mex.

Filed Jul. 28, 1999, Appl. No. 363,317

Int. Cl. G01M *3/20;3/32;* **G01N** *23/204*

U.S. Cl. 73—40 **64 Claims**



26. A method for detecting leaks from fluid holding structures, the method comprising the following steps:

(a) placing at least one pipe underneath the holding structure;

(b) disposing at least one sample container within the pipe;

(c) collecting at least one sample from around the pipe into the sample container;

(d) retrieving the sample container; and

(e) analyzing the sample to detect the leaked substance; and

wherein the step of collecting at least one sample from around the pipe into the sample container comprises collecting the leaked substance into an absorbent/adsorbent material comprising at least one material selected from the group consisting of bentonite and sand.

US 6,339,952 B1

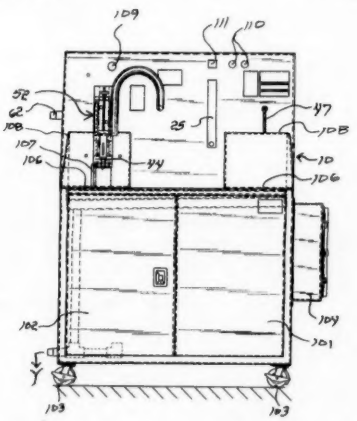
HOT FILL APPARATUS AND PROCESS THEREFOR

Terry C. Potter, Lambertville, Mich.; Andrew E. Potter, and Peter J. Hatas, both of Sylvania, Ohio, assignors to Teadt, Rising, Burton & Associates, L.L.C., Maumee, Ohio

Provisional application No. 60/147,995, filed on Aug. 10, 1999. This application Aug. 4, 2000, Appl. No. 632,078.

Int. Cl. G01M *3/04;3/02;* **A21D** *10/00*

U.S. Cl. 73—40 **15 Claims**



1. An apparatus for use in the testing of hollow thermoplastic containers having a variety of shapes and sizes by the application of hot fluid under pressure into the containers comprising, in combination:

a reverse osmosis filter for receiving fluid from an outside source and cleansing such fluid to remove contaminants therefrom;

a heating member for receiving cleansed fluid at a predetermined flow rate and a predetermined pressure from the reverse osmosis filter and heating the fluid to a predetermined temperature and maintaining the fluid at such predetermined temperature at such predetermined flow rate; and

an automatic fill member adjustable for the height and volume of the variety of shapes and sizes of hollow thermoplastic container for receiving the heated fluid and injecting the heated fluid at such predetermined temperature and flow rate into the container.

US 6,339,953 B1

PIPE LEAKAGE DETECTION

Roger Philip Ashworth, Leics, United Kingdom, assignor to Transco PLC, London, United Kingdom

PCT No. PCT/GB98/01468, § 371 Date Feb. 15, 2000, § 102(e) Date Feb. 15, 2000, PCT Pub. No. WO98/55846, PCT Pub. Date Dec. 10, 1998

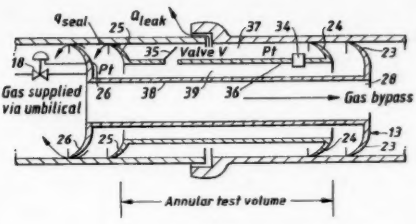
PCT Filed Jun. 3, 1998, Appl. No. 424,987

Claims priority, application United Kingdom, Jun. 4, 1997, 9711432

Int. Cl. G01M *3/04;3/08;3/28;* **F16K** *21/00;* **G01F** *15/00*

U.S. Cl. 73—49.5 **23 Claims**

1. A pipeline leak detector for conducting a leakage test sequence comprising:



means for travelling through the bore of the pipeline;

means for applying a test pressure to a fluid contained within the pipeline;

means for measuring the resultant rate of change of pressure by using back extrapolation of test data to determine the initial pressure drop rate; and

means for determining the degree of leakage at a given position within the pipeline from the rate of change measurement.

US 6,339,954 B1

METHOD OF ANALYZING CONCENTRATION OF TARGET SUBSTANCE USING QUARTZ OSCILLATOR AND DEVICE THEREFOR

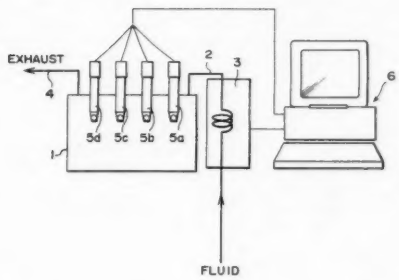
Ryuichi Naganawa; Kazutoshi Noda; Hiroaki Tao, and Mamoru Tominaga, all of Tsukuba, Japan, assignors to Secretary of Agency of Industrial Science and Technology, Japan

Filed Mar. 20, 2000, Appl. No. 531,430

Claims priority, application Japan, Apr. 16, 1999, 11-108949

Int. Cl. G01N *29/00;29/02*

U.S. Cl. 73—61.79 **6 Claims**



1. A method of analyzing a concentration of a target substance contained in a fluid, comprising the steps of:

(a) providing a quartz oscillator having a surface covered with a layer capable of absorbing the target substance;

(b) determining an optimum temperature providing the quartz oscillator with a desired sensitivity, the sensitivity of the quartz oscillator varying with temperature and with concentration of the target substance in the fluid;

(c) establishing a flow of the fluid;

(d) adjusting temperature of the fluid flow to the determined temperature;

(e) contacting said fluid having said predetermined temperature with said layer of said quartz oscillator having said predetermined temperature, so that the target substance is absorbed by said layer; and

(f) detecting a frequency of said quartz oscillator during step (e).

US 6,339,955 B1

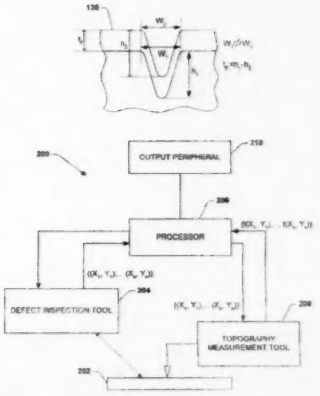
THICKNESS MEASUREMENT USING AFM FOR NEXT GENERATION LITHOGRAPHY

Khoi A. Phan, San Jose; Bharath Rangarajan, Santa Clara, and Bhanwar Singh, Morgan Hill, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 31, 2000, Appl. No. 540,251

Int. Cl. G01B *5/28;* **H01J** *37/26*

U.S. Cl. 73—105 **14 Claims**



1. A method of estimating a film thickness, comprising the steps of:

identifying a depth associated with a defect in an underlying material, wherein the defect has a width characteristic that is within an order of magnitude of an estimated thickness of a film to be analyzed;

forming the film over the underlying material;

identifying a depth associated with the defect in the film;

using the identified depths to estimate the film thickness;

determining whether the film is conformal with respect to the plurality of defects; and

discontinuing the method if the film is not conformal.

US 6,339,956 B1

PNEUMATIC AUTOMOBILE TIRE WITH INTEGRATED SENSORS AND TRACTION CONTROL SYSTEM

Heinrich Huinink, Garbsen; Andreas Köbe, Hannover; Volkmar Fries, Garbsen, and Klaus Kleinhoff, Rodenberg, all of Germany, assignors to Continental Aktiengesellschaft, Hannover, Germany

Filed May 7, 1999, Appl. No. 307,505

Claims priority, application Germany, Jan. 4, 1999, 199 00 082

Int. Cl. B60C *15/00*

U.S. Cl. 73—146 **23 Claims**

1. Pneumatic vehicle tire comprising:

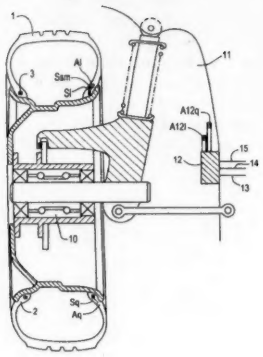
a carcass,

a bead with a bead core arranged in said bead, and

a first sensor located within said bead, wherein said first sensor delivers signals which are correlated to longitudinal and lateral forces transmitted by the pneumatic vehicle tire during operation of the pneumatic vehicle tire wherein;

(a) said sensor operates in a passive radio transmission method,

(b) the sensor receives a radio signal from a non-rotating sender,



(c) the sensor alters the received radio signal in a defined correlation with a variable to be sensed, and

(d) the sensor transmits an altered signal to a receiver.

US 6,339,957 B1

APPARATUS FOR IDENTIFYING TIRES AND METHOD THEREOF

Minao Yanase, Kobe, and Yuji Oshiro, Kakogawa, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-Ken, and Sumitomo Electric Industries, Ltd., Osaka-Fu, both of Japan

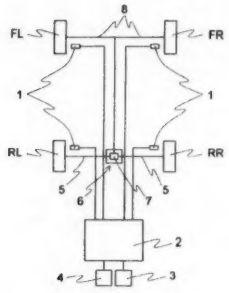
Filed Jul. 8, 1999, Appl. No. 349,237

Claims priority, application Japan, Jul. 9, 1998, 10-194141

This patent is subject to a terminal disclaimer.

Int. Cl. E01C *23/00*

U.S. Cl. 73—146 **8 Claims**



1. An apparatus for identifying between summer tires and winter tires based on rotational information that is obtained from tires attached to a driving shaft of a four-wheeled vehicle equipped with a limited slip differential device, wherein the apparatus comprises:

a rotational information detecting means for detecting rotational information of each of the tires attached to said driving shaft;

a memory means for storing the rotational information of each of the tires;

an arithmetic processing means for calculating a reciprocal of a turning radius based on the rotational information and for calculating judged values based on the rotational information of each of the tires; and

an identification means for identifying whether the tires attached to the driving shaft are summer tires or winter tires from a relationship between the reciprocal of the turning radius and the judged values.

US 6,339,958 B1

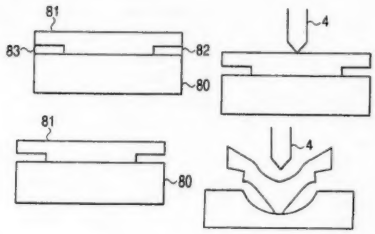
ADHESION STRENGTH TESTING USING A DEPTH-SENSING INDENTATION TECHNIQUE

Ting Y. Tsui, Palo Alto, and Young-Chang Joo, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 10, 1998, Appl. No. 208,843

Int. Cl. G01N *3/24*

U.S. Cl. 73—150 **7 Claims**



1. A method of determining adhesion strength between a first material and a second material, comprising:

forming a nanoindentation in at least the first material using an indenter tip;

monitoring at least one of

a) a load applied to the indenter tip, and

b) the penetration depth of the indenter tip; and

calculating the adhesion strength between the first material and the second material based on at least one detected value of the load or at least one detected value of the penetration depth,

wherein the first material is at least partially delaminated from the second material; and

at least a part of the first material sinks in into the second material,

wherein the first material is a thin film and the second material is a substrate, and

wherein the thin film comprises a plurality of layers, and the substrate comprises one of a base material and at least one intermediate film formed on the base material.

US 6,339,959 B1

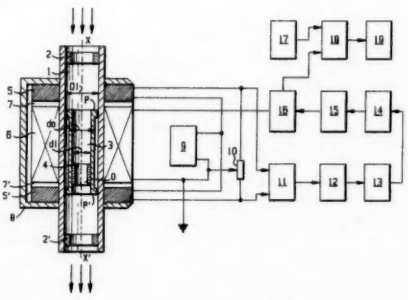
MAGNETIC FLOAT TYPE FLOWMETER

Vladimir Natapov, Nesher, Israel, assignor to N.M.F. Ltd., Jordan Valley, Israel

Filed May 10, 2000, Appl. No. 567,986

Int. Cl. G01F *3/08*

U.S. Cl. 73—239 **9 Claims**



1. A flow meter for measuring the flow rate of a fluid comprising:

a tubular conduit for passing the fluid therethrough,

a float member, disposed within the conduit capable of displacement from a neutral position by a drag imposed thereon by the fluid, at least a portion of said float member is made of magnetically responsive material,

a differential transformer surrounding the conduit comprising two separate coils connected to a variable resistor, said differential transformer providing a responsive electrical signal upon displacement of the float member from the neutral position,

a magnetic means operatively associated with the conduit for exerting on the float member a magnetic force sufficient to retain the float member in the neutral position,

a source of alternating voltage connected to said differential transformer,

a signal processing means connected to the differential transformer for processing the responsive signal produced by the differential transformer and for controlling the magnetic means, by outputting a control current signal to said magnetic means,

a source of reference voltage,

said source of reference voltage connected to a calculating means for deriving the flow rate from the control current signal, the input of the calculating means is connected to the output of the signal processing means and to the output of the source of reference voltage,

a display means connected to the output of the calculating means for visual representation of the derived flow rate value, wherein said magnetic means is configured as a solenoid, which closely surrounds the conduit, the inwardly facing surface of the solenoid matches the outwardly facing surface of the conduit, said solenoid resides between the coils of the differential transformer means and is connected to the output of the signal processing means and wherein said signal processing means includes a subtracting means, a first amplifier, a rectifier, an RC circuit, a second amplifier and an inverter means, connected in series for outputting the control current signal to the magnetic means and calculating means.

US 6,339,960 B1

NON-INTRUSIVE PRESSURE AND LEVEL SENSOR FOR SEALED CONTAINERS

R. Daniel Costley, Oxford, and Mark Henderson, Long Beach, both of Miss., assignors to Mississippi State University, Mississppi, Miss.

Filed Oct. 30, 2000, Appl. No. 698,227
Int. Cl. G01H *3/24*
U.S. Cl. 73—579 **6 Claims**

1. A method for determining an internal pressure of a sealed container, comprising:

exciting a lid of the sealed container so as to create at least two modes of vibration having separate frequencies, wherein said frequencies are fundamental, f_1, and a second frequency, f_2;

detecting the vibration resulting from said exciting to determine f_1, and f_2;

using f_2, which is indicative of internal pressure, to calculate a first value for internal pressure using a first mathematical model that is calibrated to the lid on the sealed container;

using f_1, which is indicative of volume of contents, to calculate the volume of contents in the sealed container using a second mathematical model that is calibrated to the lid on the sealed container;

wherein a natural frequency of said lid is a function of internal pressure and volume of contents; and

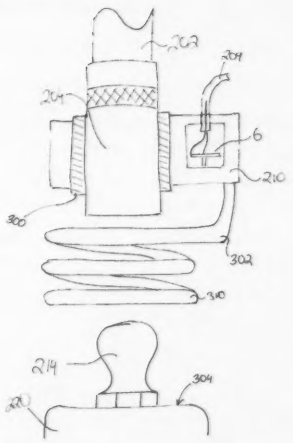
compensating for said volume of contents to determine a second value for internal pressure, wherein said second value for internal pressure is more reliable than said first value for internal pressure.

US 6,339,961 B1

ULTRASONIC DETECTING LUBRICATION APPARATUS WITH ACOUSTICALLY ISOLATED TRANSDUCER

Mark A Goodman, Cortlandt Manor; William Bishop, Pleasantville; John R. Zeno, deceased, late of New York, all of N.Y., and by Linda Mabbs-Zeno, executrix, Alexandria, Va., assignors to UE Systems, Inc., Alexandria, Va.

Continuation-in-part of application No. 09/028,554, filed on Feb. 24, 1998, which is a division of application No. 08/749,910, filed on Nov. 15, 1996, now Pat. No. 5,955,670. This application Mar. 9, 2000, Appl. No. 521,306.
Int. Cl. G01N *29/12;29/14*
U.S. Cl. 73—593 **23 Claims**



1. An apparatus for detecting ultrasonic energy generated by a mechanical device and for applying lubricant to said device, said apparatus comprising:

a lubrication tool having a lubrication delivery element;

an ultrasonic transducer which is attached to the lubrication delivery element and is acoustically isolated therefrom;

an acoustical waveguide in acoustical contact with the transducer and configured to make acoustical contact with the device when the lubrication tool is applied to the device, the transducer producing an electrical signal with an intensity related to the intensity of ultrasonic energy received from the acoustical waveguide; and

an electrical circuit for processing said electrical signal and having an output indicating the magnitude of said electrical signal.

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FORCE SENSOR

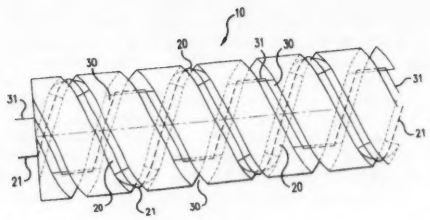
Felix Scheuter, Rolligen, and Christian Maurer, Bern, both of Switzerland, assignors to Haenni Instruments AG, Jegenstorf, Switzerland

PCT No. PCT/CH98/00435, § 371 Date May 11, 2000, § 102(e) Date May 11, 2000, PCT Pub. No. WO99/19697, PCT Pub. Date Apr. 22, 1999
PCT Filed Oct. 9, 1998, Appl. No. 529,127
Claims priority, application Switzerland, Oct. 9, 1997, 2365/97
Int. Cl. G01N *3/00*
U.S. Cl. 73—796 **25 Claims**

1. A force sensor for measuring a force applied thereto comprising:

an elastically deformable carrier elongated in a first direction;

said deformable carrier being adapted to be supported by a supporting surface with said first direction parallel to the supporting surface;



said deformable carrier being deformable in response to a force applied to said sensor;

first and second strain measuring elements associated with said carrier;

one of said first and second strain measuring elements being compressed in response to a force applied to said elongated carrier in a direction perpendicular to said first direction of elongation and perpendicular to the supporting surface;

the other of said first and second strain measuring elements being extended in response to a force applied to said elongated carrier in a direction perpendicular to said first direction of elongation and perpendicular to the supporting surface;

whereby said sensor provides an indication of the magnitude of a force applied to said elongated carrier in a direction perpendicular to said first direction of elongation and perpendicular to the supporting surface based upon changes in said first and second strain measuring elements.

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FLUID FLOW MEASUREMENT DEVICE

Bernt Helge Torkildsen, Bergen-Sandviken, Norway, assignor to Framo Engineering AS, Sandsli, Norway

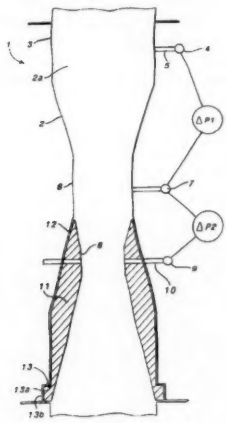
PCT No. PCT/GB97/02218, § 371 Date Apr. 23, 1999, § 102(e) Date Apr. 23, 1999, PCT Pub. No. WO98/10250, PCT Pub. Date Mar. 12, 1998

PCT Filed Aug. 15, 1997, Appl. No. 254,400

Claims priority, application United Kingdom, Sep. 6, 1996, 96 18 684

Int. Cl. G01F *1/44;7/00*

U.S. Cl. 73—861.63 **25 Claims**



1. A device for measuring fluid flow rates the device comprising:

a conduit for the fluid,

the conduit comprising

a first portion having a first pressure tap and a uniform first internal transverse cross sectional area of a first value,

a second portion having a second pressure tap and a second internal transverse cross sectional area of a second value,

a third portion having a third pressure tap and a third internal transverse cross sectional area of a third value and

means for altering the third portion to convert the third cross sectional area between a first value and a third value,

wherein the second value is smaller than the first value and the third value is smaller than the second value.

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DEVICE FOR MEASURING THE RELATIVE REVOLVING SPEED BETWEEN THE RACES OF A ROLLING CONTACT BEARING

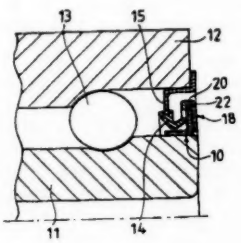
Paolo Bertetti, Turin, Italy, assignor to SKF Industrie S.p.A., Turin, Italy

Filed Feb. 17, 1998, Appl. No. 24,346

Claims priority, application Italy, Oct. 3, 1997, TO97A0877

Int. Cl. G01L *3/02*

U.S. Cl. 73—862.334 **4 Claims**



1. A device for measuring relative revolving speed between rates of a rolling contact bearing, the device comprising:

a sealing device comprising a metal insert of annular shape fast for rotation with a rotating race of the bearing, the sealing device being fitted at one end of the device for measuring relative revolting speed; and

a multipolar ring mounted to said insert and provided with magnetized segments of alternate polarity in a circumferential direction;

wherein said multipolar ring is it ring of plastoferrite that is co-moulded to said insert, and that on said insert there is formed a plurality of radial recesses adapted to yield, during co-moulding, a corresponding plurality of radial protrusions in the multipolar ring, said radial recesses and protrusions being mutually engaged so as to prevent relative rotation between the multipolar ring and the metal insert, but allow relative radial displacement owing to thermal variations.

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PROCESS AND UNIT FOR SAMPLING ALDEHYDES AND KETONES CONTAINED IN EXHAUST GASES

Michel Pasquereau, Sartrouville; Jean-François Papagni, Saint Rémy les Chevreuses; Richard Levesque, and Laurent Dayde, both of Suresnes, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison Cedex, France

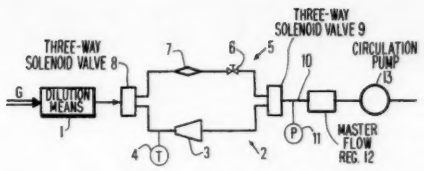
Filed Jun. 25, 1999, Appl. No. 344,807

Claims priority, application France, Jun. 25, 1998, 98 08113

Int. Cl. G01N *1/22*

U.S. Cl. 73—863.33 **4 Claims**

1. A process for sampling aldehydes and ketones contained in diluted exhaust gases from thermal combustion engines, consisting in trapping said aldehydes and ketones in a specific trapping circuit (**2**), characterized in that it further consists in passing the diluted gases for some time in a simulation circuit (**5**) that simulates the



trapping circuit (2) before passing them into the trapping circuit (2), the two circuits being arranged in parallel.

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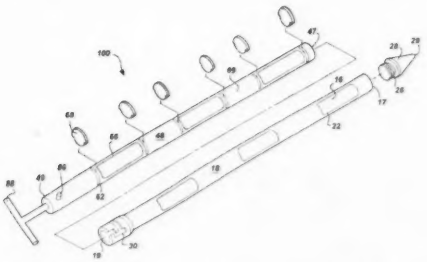
BULK POWDER SAMPLER WITH REMOVABLE PARTITIONS AND METHOD OF USING

Sanyasi R. Kalidindi, 15 Edinburg La., East Brunswick, N.J. 08816-5242

Filed Oct. 4, 2000, Appl. No. 679,047
Int. Cl. G01N *1/00*
U.S. Cl. 73—864.31 **9 Claims**



1. A bulk sampling device for taking multiple volumetric samples from the same area and at different depths of powder or semi-solid mixtures, comprising:

a hollow outer tubular casing;

an inner bulk sampling receiving rod;

said hollow outer casing having a predetermined length, an interior wall dimensioned to smoothly receive said inner receiving rod, at least one aperture, a distal end and an opened proximate end for receiving said inner receiving rod;

the proximate end of said hollow outer casing having a grooved guide pin receiving pattern;

the distal end of said hollow outer casing having first engaging means;

said inner receiving rod having a predetermined length for fitting snugly and removably inside said outer tubular casing, a proximate end, a distal end, an inner wall, an outer wall, at least one bulk sample receiving port, at least one removable partition and at least one partition receiving slot;

the proximate end of said inner receiving rod has a handle and a guide pin;

wherein the bulk sample port being aligned with and having greater dimensions than the aperture in said tubular casing such that the partition receiving slot is positioned adjacent the bulk sample port and the removable partition is positioned within the receiving slot such that each of the bulk sample ports are non-communicating with each other and the partition remains trapped within the receiving slot when said inner receiving rod is completely inserted into said hollow outer casing; and

a solid cone having a proximate end, a distal end, and second engaging means located at said proximate end which engages said first engaging means and closes the distal end of said outer tubular casing;

wherein manipulation of the handle of said receiving rod enables movement and rotation of said receiving rod thereby guiding the guide pin along the grooved guide pin receiving pattern of said outer hollow tubular casing such that when the bulk sample port is offset from the aperture in said outer tubular casing the bulk sample port is in a closed position.

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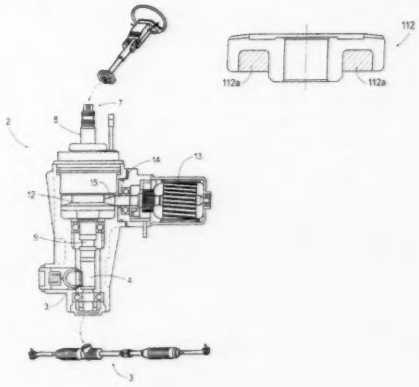
VIBRATION DAMPENING HYPOID GEAR STRUCTURE

Hiroaki Tanaka; Osamu Ogawa; Yoshimi Kajitani; Kei Takakuwa, all of Toyota; Toshiki Ohshima, Anjo; Katsutoshi Mizuno, Anjo; Naohito Ino, Anjo, and Shigeo Ishihara, Anjo, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Nissei Corporation, Anjo, both of Japan

Division of application No. 09/168,942, filed on Oct. 9, 1998, now Pat. No. 6,170,349. This application Nov. 2, 2000, Appl. No. 703,843.
Claims priority, application Japan, Oct. 13, 1997, 9-279241; Dec. 9, 1997, 9-339141
Int. Cl. F16H *55/18*
U.S. Cl. 74—409 **3 Claims**



1. A hypoid gear structure, comprising:

a hypoid ring gear disposed coaxially with a rotation axis and including a first surface and a second surface axially aligned; and

a hypoid pinion gear provided with a rotation axis of an electric motor and engaging with the first surface of the hypoid ring gear, wherein the hypoid gear includes a concave portion located in the second surface, and the concave portion is filled with a vibration-absorbing material.

US 6,339,968 B1

SHIFT LEVER APPARATUS

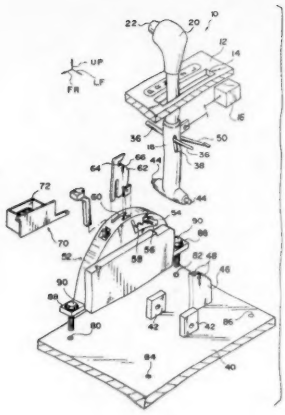
Katsushi Nagashima, Aichi-ken, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Japan

Filed Feb. 17, 2000, Appl. No. 505,846
Claims priority, application Japan, Mar. 24, 1999, 11-079798
Int. Cl. F16H *59/02*
U.S. Cl. 74—473.25 **20 Claims**

1. A shift lever apparatus comprising:

a shift lever connected to a gearbox of a vehicle, the shift lever, by being shift-operated to a predetermined shift position, changing a shift range to a predetermined shift range which corresponds to the predetermined shift position, among a plurality of shift ranges set at the gearbox;

a rod integrally moved together with said shift lever within the shift lever due to shift-operation of said shift lever, said rod having a projection portion which is movable with respect to said shift lever due to a releasing operation and which projects toward an outer side of said shift lever;



a detent member through which the projection portion penetrates, the detent member being located opposite the projection portion along a direction in which the projection portion moves as the shift lever is shift-operated, the plate portion of the detent member having a restricting portion formed on the detent hole which can be avoided by the projection portion by a releasing operation; and

a base member supporting the shift lever in a pivotable manner and having a first holding portion for holding the detent member on one side of the shift lever and having a second holding portion for holding the detent member on the opposite side of the shift lever, the base member being made substantially integral with the detent member when said detent member is in one of the first holding portion and the second holding portion.

US 6,339,969 B1

THREE-DEGREE-OF-FREEDOM PARALLEL PLANAR MANIPULATOR

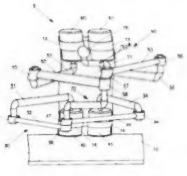
Septimiu E. Salcudean, 4338 West 2nd Avenue, Vancouver, B.C., Canada, V6R 1K3; Leo J. Stocco, 205-4th Avenue, New Westminster, B.C., Canada, V3L 1N5, and Icarus C. N. Chau, 2228 East 11th Avenue, Vancouver, B.C., Canada, V5N 1Z6

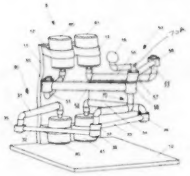
Provisional application No. 60/137,489, filed on Jun. 4, 1999.

This application May 31, 2000, Appl. No. 584,201.

Int. Cl. B25J *11/00*

U.S. Cl. 74—490.05 **17 Claims**





1. A three degree of freedom manipulator comprising a base, a pair of off set substantially parallel rotary joints, a crankshaft mounted in said pair of rotary joints, said crankshaft having an interconnecting portion extending between said pair of rotary joints, a pair of joint moving means one to independently move each of said rotary joints in a plane perpendicular to the rotary axes of said joint, said pair of joint moving means each being mounted on said base and said joint moving means each having a drive means mounted on said base for independently and controllably driving each of said joint moving means to independently move each of said rotary joints and wherein each of said drive means comprises a pair of independently driven drivers.

US 6,339,970 B1

TELESCOPIC STEERING COLUMN WITH A DEFORMATION BODY

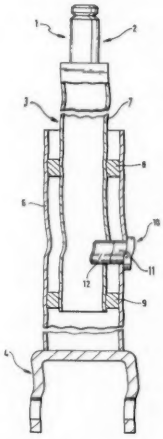
Waldemar Blex, Aschaffenburg, Germany, assignor to Mannesmann VDO AG, Frankfurt, Germany

Filed Oct. 21, 1999, Appl. No. 425,843

Claims priority, application Germany, Oct. 26, 1998, 198 49 262

Int. Cl. B62D *1/18*

U.S. Cl. 74—492 **23 Claims**



1. A telescopic steering column having an outer column tube and a stem, the column tube and the stem being connected by a deformation body, wherein the deformation body has a sharing body (**10**, **15**, **17**, **23**), which has a shearing area differing from its cross-sectional area.

US 6,339,971 B1

PEDAL SUPPORTING STRUCTURE OF A VEHICLE

Yoshihisa Kato, Nishikamo-Gun, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

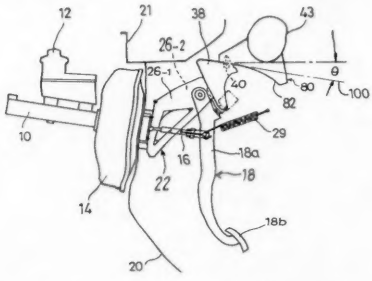
Filed Mar. 17, 1997, Appl. No. 818,452

Claims priority, application Japan, Mar. 25, 1996, 8-068515

This patent is subject to a terminal disclaimer.

Int. Cl. G05G *1/14*; **B60K** *28/14*

U.S. Cl. 74—512 **19 Claims**



1. A pedal supporting structure in a vehicle, comprising:

a pedal including a lever portion extending from said pedal;

a pedal bracket pivotably supporting said lever portion of said pedal;

a body member located adjacent said pedal bracket;

a connection mechanism that disengageably engages a portion of said pedal bracket to said body member by a front-to-rear movement of said pedal bracket relative to said body member *in a front-to-rear direction of said vehicle; and*

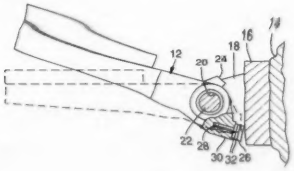
a guiding mechanism in sliding contact with said pedal bracket so as to slidingly guide said front-to-rear movement of said pedal bracket so that said front-to-rear movement of said pedal bracket causes a movement of said pedal relative to said body member in a rear-to-front direction of said vehicle and so that said front-to-rear movement of said pedal bracket includes a degree of downward movement relative to said vehicle that increases as said pedal bracket moves rearwardly relative to said vehicle and so that said pedal is moved relative to a forward end of said vehicle.

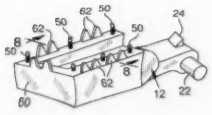
US 6,339,972 B1

MOTORCYCLE FOOT PEG

Joshua A. Paris, Portland, Oreg., assignor to Mountainspeed, Portland, Oreg.

Filed Oct. 14, 1999, Appl. No. 418,404
Int. Cl. G05G *1/18;* **B62J** *25/00*
U.S. Cl. 74—564 **7 Claims**





1. A foot peg mounted to a frame of a motorcycle, comprising:

a pedal member connected at one end to the motorcycle frame and cantilevered laterally from the frame and in the cantilevered position defining an upper foot engageable surface;

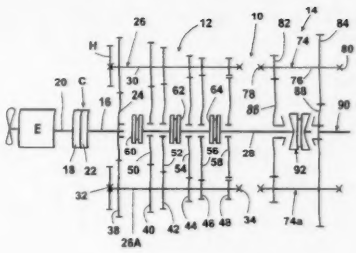
said upper foot engageable surface having threaded openings, and threaded pins threadably inserted into the openings, with *a portion thereof exposed upwardly from said surface for* engagement by a rider's foot, each of said pins adjustable into and out of the respective threaded openings for altering the portion exposed for individual gripping and for collectively defining the camber of the foot support.

US 6,339,973 B1

SLAVE VALVE WITH INTEGRAL SYNCHO-SAVER LOGIC

Daniel A. Monette, and Patrick L. Brown, both of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 10, 2000, Appl. No. 546,447
Int. Cl. F16H *3/02*
U.S. Cl. 74—745 ***19 Claims***



1. In a pressurized fluid operated control system for a compound transmission including a multiple speed main transmission section connected in series with a multiple speed auxiliary transmission section, an operator actuated selection device allowing selection of a plurality of main transmission section ratios or of a main transmission section neutral position and allowing preselection of an *auxiliary transmission section ratio, an auxiliary shifting mecha-*nism including a fluid actuated actuator piston slideably and sealingly received in an actuator cylinder defining a first and second cylinder chambers, shifting from one of the auxiliary section speed ratios to another of the auxiliary section speed ratios requiring simultaneous pressurization of one of the cylinder chambers and exhausting of the other of the cylinder chambers, a control system comprising:

an actuator control valve controlled by the operator actuated selection device adapted to connect the first cylinder chamber to a source of pressurized fluid in response to the selection device; and

a second valve adapted to connect the second cylinder chamber to a source of pressurized air when the main transmission *section is selectively moved to one of the plurality of main* transmission section ratios,

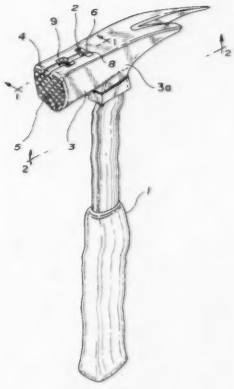
wherein said actuator control valve and said second valve are incorporated within a single valve body.

US 6,339,974 B1

CARPENTER HAMMER

Josef Kotschner, 6-9196 Tronson, Rd., Vernon, B.C., Canada, V1H 1E8, and Ralph-Paul Kotschner, 8203 Westcal Rd., Vernon, B.C., Canada, V1B 1Y4

Filed Mar. 16, 1998, Appl. No. 39,474
Int. Cl. B25D *1/00*
U.S. Cl. 81—24 ***3 Claims***



1. A hammerhead having in combination a pair of asymmetric claws at one end and a shank portion having a magnetic nail holder;

a) said claws having a longer pointed claw and a shorter claw having a flat end, said shorter claw having a smaller surface area on its bottom, said claws defining a beveled groove *between them,*

b) said shank portion being square shaped, having a scored face and a T- shaped notch with a notch portion extending from said face of said shank portion rearwardly thereof for such a distance as to accommodate different size nails, said notch portion terminating in a transverse section having a greater depth than said notch portion to accommodate a head of a nail, said head abutting against a wall of said shank and a length of said nail being firmly aligned in said notch, a cavity wider than said notch and located about midway of said face and said transverse section and below said notch, a permanent magnet inserted and secured in said cavity without a fastener, said magnet having a high energy product expressed as Mega Gauss Oersteds (MGOe) and an upper surface that is about flush with a lower surface of said notch,

c) said hammerhead being attached to a handle and a protection ring surrounding said handle and said head at the point of attachment,

d) said magnetic holder enabling the starting of a nail that is not within arm reach of a user and said asymmetric claws allowing easy access for removal of bent nails in tight places with the longer claw enabling pickup of heavy pieces of material.

US 6,339,975 B1

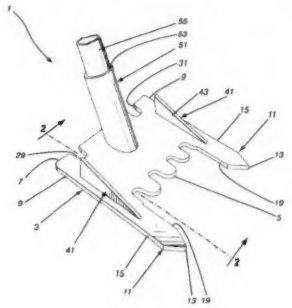
ROOFING TOOL

William Harpell, 2380 Findlay Road, Joyceville, Ontario, Canada, K0H 1Y0

Continuation-in-part of application No. 09/166,533, filed on Oct. 6, 1998, now abandoned, which is a continuation-in-part of application No. 08/728,162, filed on Oct. 9, 1996, now Pat. No. 5,836,222. This application Jun. 5, 2000, Appl. No. 585,789.

Int. Cl. E04D *15/02*

U.S. Cl. 81—45 **20 Claims**



1. A roofing tool having a generally quadratic blade with a front edge, a rear edge, and side edges joining the front and rear edges; a tubular socket for a handle extending upwardly and rearwardly from the top of the blade near its rear edge; the blade having two integral teeth projecting forwardly from the front edge of the blade, the forward ends of the teeth adapted to be easily slipped under roofing material to be removed; at least one nail receiving slot provided in the blade between the teeth, the slot extending rearwardly from the front edge of the blade, so that a nail located in the end of the slot is located a considerable distance from the front of the teeth to provide a relatively long lever arm for lifting the nail; the slot having parallel sides spaced apart a distance to receive the shank of a nail between the sides while supporting the head of the nail on the blade adjacent the sides; and at least the inner sides of the teeth beveled to allow the teeth to lift up shingle nails.

US 6,339,976 B1

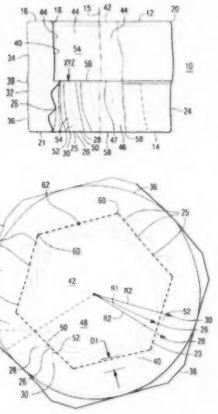
TOOL FOR REMOVING DAMAGED FASTENERS AND METHOD FOR MAKING SUCH TOOL

Chalmer C. Jordan, R.D. 1, Box 575, Saegertown, Pa. 16433

Filed Nov. 12, 1999, Appl. No. 439,211

Int. Cl. B25B *13/50*

U.S. Cl. 81—53.2 **16 Claims**



1. A tool for removing fasteners, a portion of said tool being shaped to cooperate with a drive mechanism, said tool comprising:

a first end;

a second end that is oppositely disposed on the tool body from the first end;

an outside surface that is defined between the first and second ends; and

an inside surface that defines a closed passageway between the first and second ends, a portion of the inside surface adjacent to said second end having a generally polygonal cross-section, the portion of said inside surface adjacent to said second end defining a central opening, said central opening having an area that decreases as the longitudinal position away from the second end increases, said polygonal, inside surface adjacent to said second end further including a plurality of inwardly extending spiral splines.

US 6,339,977 B1

REVERSIBLE RATCHET WRENCH

Song-Ming Lee, and Yu-Chun Lee, both of PO Box 82-144, Taipei, Taiwan

Filed Nov. 22, 2000, Appl. No. 717,259

Int. Cl. B25B *13/46*

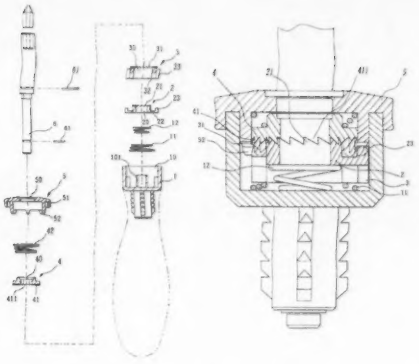
U.S. Cl. 81—58.3 **2 Claims**

1. A reversible ratchet wrench fastened to a tool handle to hold a tool bit holder shank and set between a first position where said tool bit holder shank is stopped from rotary motion relative to the reversible ratchet wrench, a second position where said tool bit holder shank is allowed to be rotated in one direction relative to the reversible ratchet wrench, and a third position where said tool bit holder shank is allowed to be rotated in the reversed direction relative to the reversible ratchet wrench, the reversible ratchet wrench comprising:

a casing fastened to the tool handle and holding a tool bit holder shank for holding a tool bit;

first spring means mounted in said casing;

a backward control ratchet wheel supported on said first spring means inside said casing, said backward control ratchet wheel comprising a center through hole for the passing of the tool bit holder shank, a series of teeth disposed at a top side thereof and sloping leftwards around the center through hole of said backward control ratchet wheel, a plurality of radial



ribs equiangularly spaced around the periphery thereof, said radial ribs each having an upwardly protruded block;

second spring means mounted in said casing;

forward control ratchet wheel concentrically mounted with said backward control ratchet wheel and supported on said second spring means inside said casing, said forward control ratchet wheel comprising a center through hole for the passing of the tool bit holder shank, a series of teeth disposed at a top side thereof and sloping rightwards around the center through hole of said forward control ratchet wheel, and a plurality of radial blocks equiangularly spaced around the periphery thereof;

a stop control ratchet wheel mounted in said casing, said stop control ratchet wheel comprising a center through hole, which receives the tool bit holder shank to stop the tool bit holder shank from rotary motion relative to said stop control ratchet wheel, a series of first teeth and a series of second teeth concentrically disposed at a bottom side thereof and sloping in reversed directions and adapted for engaging the series of teeth of said backward control ratchet wheel and the series of teeth of said forward control ratchet wheel;

third spring member mounted in said casing and adapted to force said stop control ratchet wheel into engagement with said forward control ratchet wheel and said backward control ratchet wheel; and

a rotary control knob covered on said casing and rotated between said first position, said second position and said third position, said rotary control knob comprising a center through hole for the passing of the tool bit holder shank, and a plurality of downwardly extended protruded blocks;

wherein the downwardly extended protruded blocks of said rotary control knob are disconnected from the radial blocks of said forward control ratchet wheel and the protruded blocks of said backward control ratchet wheel for enabling said stop control ratchet wheel to be forced by said third spring means into engagement with said forward control ratchet wheel and said backward control ratchet wheel to stop the tool bit holder shank from rotary motion relative to said casing when said rotary control knob is turned to said first position; the downwardly extended protruded blocks of said rotary control knob are pressed on the radial blocks of said forward control ratchet wheel to disengage said forward control ratchet wheel for enabling said tool bit holder shank to be rotated with said stop control ratchet wheel in one direction when said rotary control knob is turned to said second position; the downwardly extended protruded blocks of said rotary control knob are pressed on the protruded blocks of said backward control ratchet wheel to disengage said backward control ratchet wheel from said stop control ratchet wheel for enabling said tool bit holder shank to be rotated with said stop control ratchet wheel in the reversed direction when said rotary control knob is turned to said third position.

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OPEN END WRENCH

Gernot Hirse, Frankfurt am Main, Germany, assignor to Hirse-Patent-Lizénz-GmbH, Frankfurt am Main, Germany

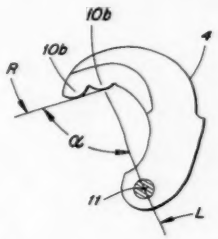
PCT No. PCT/EP98/06698, § 371 Date Jun. 28, 2000, § 102(e) Date Jun. 28, 2000, PCT Pub. No. WO99/21685, PCT Pub. Date May 6, 1999

PCT Filed Oct. 22, 1998, Appl. No. 530,261

Claims priority, application Germany, Oct. 28, 1997, 197 47 536

Int. Cl. B25B *13/28*

U.S. Cl. 81—99 **10 Claims**



1. An open-ended wrench comprising:

a wrench handle;

a fixed clamping jaw rigidly connected to the handle; and

a spring-loaded movable clamping jaw pivotably mounted to the fixed jaw at a pivot point;

the fixed jaw including a fixed clamping surface, and the movable clamping jaw including a movable clamping surface disposed generally opposite the fixed clamping surface, the fixed and movable clamping surfaces together forming a cavity for receiving a workpiece;

the fixed clamping surface including a plurality of convexly curved fixed clamping teeth, wherein adjacently disposed ones of the fixed teeth are separated by a notch, the plurality of fixed teeth including a pair of front and rear convexly curved fixed clamping teeth disposed adjacent a mouth of the cavity and oriented such that peaks of the front and rear fixed teeth together define a fixed clamping surface, the front fixed clamping tooth being disposed closer to the mouth than is the rear fixed clamping tooth;

the movable clamping surface including a plurality of convexly curved movable clamping teeth, wherein adjacently disposed ones of the movable teeth are separated by a notch, the plurality of movable teeth including a pair of convexly curved front and rear movable clamping teeth disposed adjacent the mouth of the cavity and oriented such that peaks of the front and rear movable teeth lie on a reference line which terminates at a termination point disposed at a peak of the rear movable tooth, an imaginary line extending from that termination point to the pivot point forms an angle not greater than about ninety degrees with the movable clamping surface;

the movable jaw including a concavely curved recess extending from a rear end of the rearwardmost one of the plurality of movable teeth to a location adjacent the pivot point.

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ADJUSTABLE TOOL HANDLE

Che Ming Chiang, 12F, No. 342, Sec. 1, Nan King East Road, Taichung, Taiwan, 401

Filed Oct. 16, 2000, Appl. No. 687,106

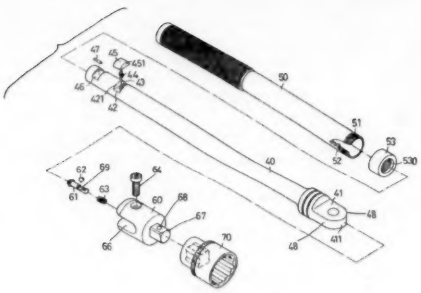
Int. Cl. B25G *1/04*

U.S. Cl. 81—177.2 **9 Claims**

1. An adjustable tool handle comprising:

a barrel including a first end,

a handle body slidably received in said barrel and extendible and adjustable relative to said barrel, said handle body including a first end slidably received in said barrel and including a

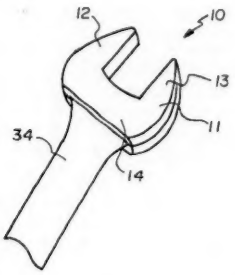


channel formed in said first end thereof, said channel of said handle body including two narrower ends and a greater middle portion, and

a rod received in said channel of said handle body,

said barrel being allowed to be slided relative to said handle body when said rod is engaged in said greater middle portion of said channel of said handle body, and said barrel being clamped between said barrel and said handle body to secure said barrel and said handle body together when said rod is engaged in either of said narrower ends of said channel of said handle body.

US 6,339,980 B1
PROTECTIVE TOOL COVER
Richard E. Woolf, 28 Ossulton Way, Hampstead Garden Suburb, London N2 0DS, United Kingdom
Filed Feb. 25, 2000, Appl. No. 512,682
Int. Cl. B25B *13/58*
U.S. Cl. 81—185.1 **5 Claims**



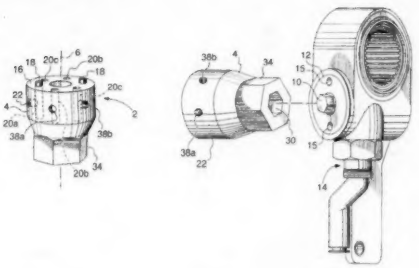
1. A protective tool cover for a tool having a pair of jaw portions, the jaws having opposing jaw faces spaced a predetermined distance from each other, each of said jaws having a rear surface, said tool cover comprising:

a cover member being adapted to removably cover a jaw portion of a tool;

said cover member further comprising a pair of jaw-like end portions and a main portion interconnecting said jaw-like end portions, said main portion holding said jaw-like end portions in a parallel relationship to one another, said jaw-like end members defining secondary jaw faces on said jaw-like end portions which form an object-receiving slot therebetween;

said jaw-like end portions each having side and end walls and having an internal cavity, each of said jaw-like end portions having a bottom end with an opening extending in said internal cavity, said opening and said internal cavity being adapted to receive said jaw portion of said tool, said object-receiving slot being adapted to reduce a size of the object-receiving slot of said tool by one tool size.

US 6,339,981 B1
BRAKE ADJUSTMENT TOOL
Carey Andrew Koochin, Canal Flats, Canada, assignor to Koochin Trucking Ltd., Canal Flats, Canada
Filed May 24, 2000, Appl. No. 576,615
Int. Cl. B25F *1/00*
U.S. Cl. 81—437 **5 Claims**



1. A tool for adjusting an automatic slack adjuster, the tool comprising:

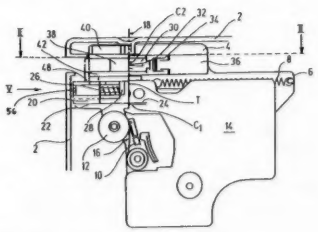
a body having an outer surface and a long axis extending between a first end and an opposite end;

the first end including an annular face surrounding an opening, the annular face being coaxial with the long axis of the body and having a pair of diametrically opposed pins extending therefrom;

the opposite end including an end face having formed therein a polygonal aperture, the polygonal aperture being positioned coaxially with the long axis of the body; and

the outer surface including a polygonal faceted region for engagement by a wrench, the polygonal faceted region being disposed about a centre axis positioned coaxially with the long axis of the body.

US 6,339,982 B1
CUTTING MECHANISM AND A PRINTING DEVICE WITH AUTOMATIC CUT
Clive Graham Angel, Hertfordshire; Clive Lawrence Ayling, Hauxton, and Graham Scott Gutsell, Harston, all of United Kingdom, assignors to Esselte NV, Niklaas, Belgium
Division of application No. 08/855,417, filed on May 13, 1997, now Pat. No. 6,014,921. This application Jan. 14, 1999, Appl. No. 229,959.
Claims priority, application United Kingdom, May 14, 1996, 9610028; Jul. 5, 1996, 9614112; Jul. 5, 1996, 9614146
Int. Cl. B26D *5/20*
U.S. Cl. 83—76.9 **19 Claims**



1. A tape printing device comprising:

a printing mechanism for performing printing operations on a multi-layer tape;

a cutting mechanism for performing cutting operations on said multi-layer tape, the cutting mechanism comprising first and second cutting blades, the first cutting blade being arranged to cut through all layers of the multi-layer tape and the second

cutting blade being arranged to cut through one or more layers of the multi-layer tape, but leaving at least one layer intact and spaced at a location lengthwise of the tape with respect to the first cutting blade;

a keyboard comprising data input components for allowing a user to define an image to be printed and a cutter control component for allowing a user to select a cutting mode; and

a cutter controller connected to receive a control signal from the keyboard and responsive to said control signal to selectively deactivate the first cutting blade while leaving the second cutting blade activated, in at least one of said selected cutting modes.

US 6,339,983 B1

AMMUNITION-FEEDING DEVICE FOR A CANNON

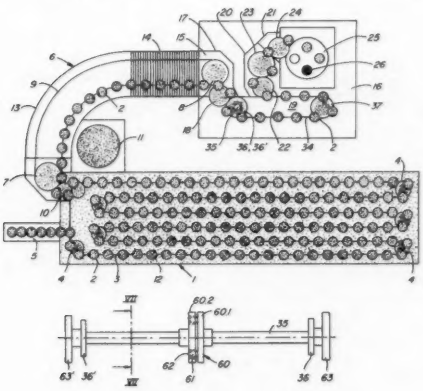
Peter Mannhart, Eschenbach, Switzerland, assignor to Oerlikon Contraves AG, Zurich, Switzerland

Filed Dec. 2, 1999, Appl. No. 453,167

Claims priority, application Switzerland, Dec. 4, 1998, 2411/98

Int. Cl. F41A *9/29*

U.S. Cl. 89—33.16 **11 Claims**



1. An ammunition-feeding device for a cannon comprising:

at least one conveyor chain for transporting ammunition cartridges to said cannon, whereby the direction of conveyor chain transport is generally perpendicular to the longitudinal axis of said ammunition cartridges; and,

a buffer shaft connected to one of said conveyor chains for both driving said conveyor chain and slanting the axial orientation of said ammunition cartridges within said connected conveyor chain.

US 6,339,984 B1

PISTON FOR FLUID MACHINES

Takahiro Sugioka; Takayuki Kato, and Masato Takamatsu, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 18, 2000, Appl. No. 484,355

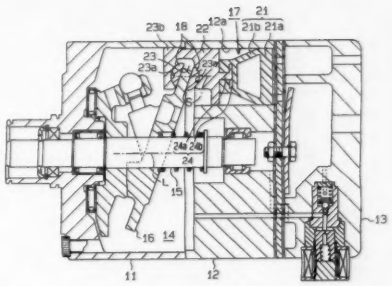
Claims priority, application Japan, Jan. 20, 1999, 11-011567; Oct. 27, 1999, 11-305542

Int. Cl. F16H *19/00*

U.S. Cl. 92—248 **21 Claims**

1. A piston for cooperating with a driving body in a machine, the piston comprising:

a metal coupler formed from an aluminum alloy containing approximately 7 to 13 weight percent of silicon, the coupler connected to the driving body and having a first thermal expansion coefficient; and



a body formed from a thermosetting resin molding material comprising a phenol resin and glass fiber, the thermosetting resin molding material containing approximately 15 to 65 weight percent of the glass fiber, wherein the body is molded to the coupler and has a second thermal expansion coefficient, the first thermal expansion coefficient substantially matching the second thermal expansion coefficient.

US 6,339,985 B1

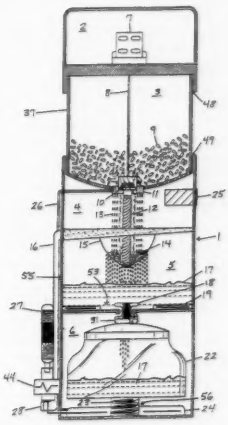
COFFEE MAKER

Robert R. Whitney, 7110 Day St., Dallas, Tex. 75227

Provisional application No. 60/073,497, filed on Feb. 3, 1998. This application Feb. 1, 1999, Appl. No. 243,665.

Int. Cl. A47J *31/42*

U.S. Cl. 99—286 **17 Claims**



1. A multi-stage coffee brewer and grinder combination comprising:

a motor and a motor section that houses said motor;

a gearing means for rotating a shaft wherein said gearing means is housed in said motor section;

a can section comprising a can of coffee beans;

a grinding section comprising a grinder, a sprayer, a filter, and an auger;

a propeller-type agitator disposed directly above said grinder, said agitator rotating in said can section when said shaft is rotated;

said shaft extending from said motor to said auger;

a cooking section that collects and brews the coffee, and having a heater therein;

a switching means in said cooking section to stop said coffee production when said cooking section collects too much of said coffee;

an overflow means in said cooking section to siphon off any excess of said coffee;
a pot section that houses a removable receptacle;
an opening between said cooking section and said pot section;
a plug in said opening;
a pivoting arm in said pot section;
a second heater in said pot section; and
a tension bearing means for adjusting the distance between said pivoting arm and said removable receptacle within said pot section;
wherein said gear means is a gearbox housed is said motor section;
wherein said can of coffee beans has an opening on the top surfaces and an opening on the bottom surface;
wherein said shaft passes through said can of coffee beans using said top opening and said bottom opening in said can of coffee beans;
wherein said sprayer encircles said grinder;
wherein said grinder comprises a top grinder and a bottom grinder and said grinder is housed in an enclosure;
wherein said filter is invertable having a concave shape during the coffee making cycle and a convex shape during the cleaning cycle;
wherein said switching means is a float switch;
wherein said overflow means is an opening in said cooking section that connects to said drain;
wherein said plug is a temperature sensitive bimetal and said plug has a magnet attached to the bottom surface of said plug;
wherein said pivoting arm pivots around a spring and said pivoting arm has a protuberance at one end and a magnet at the other end;
wherein said auger has a top o-ring and a bottom o-ring;
wherein said heater has a donut configuration with a center opening;
wherein said plug is disposed in the center opening of said heater;
wherein said second heater has a donut configuration with a center opening; and
wherein said tension bearing means is a spring disposed in said center opening of said second heater.

US 6,339,986 B1

APPARATUS FOR PROCESSING LARGE SQUARE HAY BALES INTO SMALLER RECOMPRESSED BALES

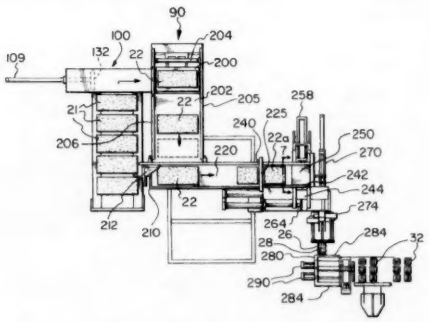
Ed Van Hierden, Lethbridge, Canada, assignor to Hunterwood Technologies, Ltd., Cochrane, Canada

Continuation-in-part of application No. 09/184,033, filed on Nov. 2, 1998, now abandoned. This application Dec. 23, 1999, Appl. No. 471,235.

Claims priority, application Canada, Nov. 3, 1997, 2220627; Sep. 20, 1999, 2282838

Int. Cl. B30B *9/30;15/08;* **A01F** *15/04*

U.S. Cl. 100—6 **11 Claims**



1. Apparatus for processing a large square hay bale into recompressed units, comprising in combination:

a first cutting means for making at least one cut through the bale to produce at least two slabs of approximately equal size;
a separating means for separating the slabs, adjacent to said first cutting means;
a bale support means, adjacent to said separating means;
a compression chamber for recompressing the slabs, adjacent to said bale support means;
a first moving means for moving the slabs along the bale support means and into the compression chamber, wherein the slabs may be compressed to form recompressed units; and
a second moving means for moving the recompressed units out of the compression chamber;
said first cutting means comprising:
a bale bed of sufficient size to accommodate the hay bale, having
a cutting end which is adjacent to said separating means; at least one stationary horizontal knife, situated at the cutting end of the bale bed, to create slabs of approximately equal size;
means for supporting said at least one stationary horizontal knife; and
a third moving means for pushing the bale through said at least one stationary horizontal knife, to produce said slabs.

US 6,339,987 B1

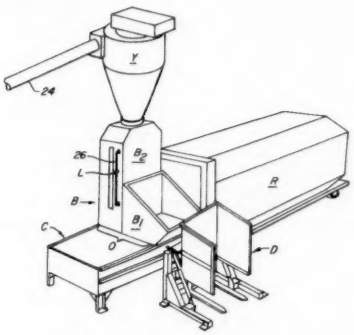
BINDERY COMPACTION PROCESS

Daniel Dunaway, Orinda, Calif., assignor to Wastestream, Orinda, Calif.

Division of application No. 09/376,775, filed on Aug. 17, 1999, now Pat. No. 6,289,799. This application Jul. 18, 2001, Appl. No. 908,681.

Int. Cl. B30B *9/30;15/30*

U.S. Cl. 100—35 **3 Claims**



1. A process of bindery compaction in a bindery with a compactor wherein the compactor includes:
a receiver having an opening for receiving paper waste crowded into the opening;
a chute having a bottom, two parallel sides and an open top to receive waste material and extending from the opening of the receiver away from the receiver to define a volume to be compacted, the chute ending at the opening of the receiver;
a platen extending between the two parallel sides of the chute and moveable along the chute over the bottom of the chute for crowding material placed into the open top of the chute into the receiver;
an expandable ram fixed relative to the chute away from the opening of the receiver and expandable along the chute for moving the platen during crowding of the waste material from the chute into the receiver; and,
a plate for sealing the open top of the chute behind the platen and over the expandable ram when the platen is moved forward along the chute to crowd material into the receiver;
the process including the steps of:

providing a first bin formed overlying the chute having a first bin bottom occupying less than a full area of the open top of the chute;

providing a second bin formed overlying the chute having a second bin bottom occupying a remainder of an area of the open top of the chute;

maintaining the platen normally forward in the chute to close the opening the receiver;

at least partially filling one of the bins;

at least partially retracting the platen from the normally forward position to open the chute to receive material from either the first bin or the second bin for crowding into the receiver; and,

returning the platen to the normally forward position to crowd and compact material received in at least one of the bins into the receiver.

US 6,339,988 B1

CYLINDER WITH A RUBBER COVER

Karl Robert Schäfer, Rimpar, Germany, assignor to Koenig & Bauer Aktiengellschaft, Wurzburg, Germany

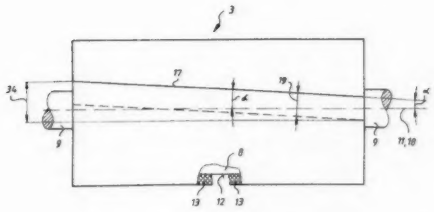
PCT No. PCT/DE98/01462, § 371 Date Dec. 2, 1999, § 102(e) Date Dec. 2, 1999, PCT Pub. No. WO98/55314, PCT Pub. Date Dec. 10, 1998

PCT Filed May 28, 1998, Appl. No. 424,834

Claims priority, application Germany, Jun. 3, 1997, 197 23 123

Int. Cl. B41F *31/00*

U.S. Cl. 101—351.7 **4 Claims**



1. An inking and dampening agent roller for a rotary printing press comprising:

a roller body having a roller body surface and an axis of rotation;

a rubber covering on said roller body, said rubber covering being formed by the placement of a finite length rubber blanket onto said roller body surface, said finite length rubber blanket including an underside, a start and an end;

an adhesive bond between said underside of said finite length rubber blanket and said surface of said roller body; and

a joint formed by the meeting of said start and said end of said finite length rubber blanket placed on said roller body surface, said joint defining an angled joint line, said angled joint line extending at an angle between greater than 0° and 6° on said roller body surface with respect to said axis of rotation of said roller body.

US 6,339,989 B1

INK FOUNTAIN WITH TWO-POSITION TRAY

Shinichi Fujimoto, and Teruaki Kihara, both of Hiroshimaken, Japan, assignors to Mitsubishi Heavy Industries, Ltd., Tokyo, Japan

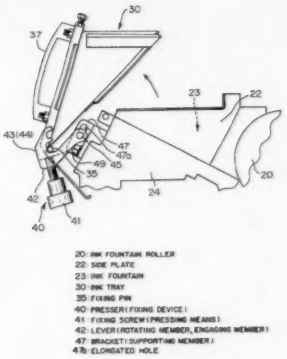
Filed Mar. 30, 2000, Appl. No. 538,742

Claims priority, application Japan, Aug. 19, 1999, 11-232836; Aug. 19, 1999, 11-232837

Int. Cl. A41F *31/02;31/00*

U.S. Cl. 101—367 **7 Claims**

5. An ink supplying apparatus which supplies an ink from an ink fountain to an ink fountain roller, said apparatus comprising:



an ink tray set detachably in the interior of said ink fountain and equipped with a pin protrusively formed on each of its left- and right-hand end portions; and

a hooker installed on an operating space side in front of said ink fountain for catching said pin to temporarily hold said ink tray exterior to said ink fountain.

US 6,339,990 B1

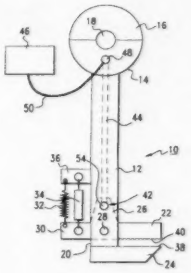
GRIPPING DEVICE, PARTICULARLY FOR AUTOMATIC PRINTING AND/OR INSERTING MACHINES

Rainer Strietzel, Heidelberg, and Kurt Wittig, Weinheim, both of Germany, assignors to ASG Luftfahrttechnik und Sensorik GmbH, Weinheim, Germany

Filed Apr. 28, 2000, Appl. No. 559,047

Int. Cl. B41F *1/30;* **B23B** *31/02*

U.S. Cl. 101—408 **19 Claims**



1. Gripping device (**10**), particularly for automatic printing and/or inserting machines, with a first and second gripping element (**22**, **24**), of which at least one gripping element (**22**) can be moved relative to the other gripping element (**24**) for grabbing sheet-like materials, as well as with a measuring device (**42**) for recording at least one position of the gripping elements (**22**, **24**) towards each other, characterized by the fact that the measuring device (**42**) is equipped with a transmitter (**52**) and a sensor (**54**) that is allocated to it for the continuous recording of the relative position of the gripping elements (**22**, **24**) towards one another, with the transmitter (**52**) being arranged in the moveable gripping element (**22**) and the sensor (**54**) in the fixed gripping element (**24**), or vice versa.

US 6,339,991 B1

METHOD FOR DETERMINING THE POSITION OF AN ENGRAVING ELEMENT

Bernd Lübcke, Molfsee, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

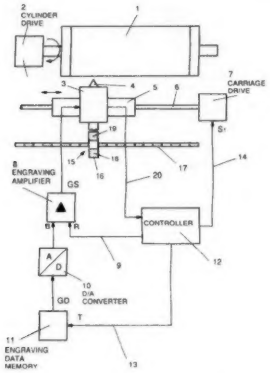
PCT No. PCT/DE99/00539, § 371 Date Oct. 30, 2000, § 102(e) Date Oct. 30, 2000, PCT Pub. No. WO99/47353, PCT Pub. Date Sep. 23, 1999

PCT Filed Mar. 2, 1999, Appl. No. 646,247

Claims priority, application Germany, Mar. 18, 1998, 198 11 637

Int. Cl. B41L *3/02*

U.S. Cl. 101—486 **14 Claims**



1. A method for determining an axial position of at least one engraving element in an electronic engraving machine for engraving a print cylinder for rotogravure, comprising the steps of:

with an engraving element, engraving a series of cups arranged in an engraving raster into a print cylinder, engraved depths of said cups determining gradations to be engraved between light and dark, for planar engraving of the cups, with the engraving element executing a feed motion along the print cylinder that is directed in an axial direction of the print cylinder;

providing a stationary toothed comb directed in an axial direction of the print cylinder whereby one of tooth faces of each and every tooth represents an axial distance from an axial reference point as a multiple of a tooth division of the toothed comb;

providing the engraving element with an axial reference mark;

determining a momentary axial position of the engraving element relating to print cylinder before the engraving;

displacing the engraving element together with its reference mark from said momentary position to a closest, relevant tooth face of the toothed comb corresponding to said axial position of the engraving element to be determined;

measuring an approximate distance of the reference mark from the reference point;

comparing the measured approximate distance to the multiple of the tooth division of the toothed comb; and

determining from the comparison an exact distance of the position of the engraving element from the reference point.

US 6,339,992 B1

SMALL CHARGE BLASTING APPARATUS INCLUDING DEVICE FOR SEALING PRESSURIZED FLUIDS IN HOLES

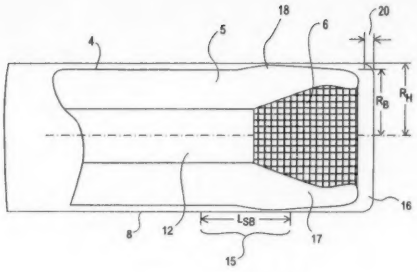
John D. Watson, Evergreen, Colo., assignor to RockTek Limited, Pinjarra, Australia

Provisional application No. 60/124,274, filed on Mar. 11, 1999. This application Apr. 9, 1999, Appl. No. 289,683.

Int. Cl. F42B *3/00*

U.S. Cl. 102—312 **29 Claims**

1. A small charge blasting system for breaking hard materials, comprising:



a chamber for receiving an energetic substance; and

a barrel in communication with the chamber for extending into a hole in the material and releasing a pressurized working fluid generated by the energetic substance into the hole to initiate a fracture in the material, wherein the barrel has a bore having a first cross-sectional area normal to the bore's central axis at an interior portion of the bore and a second cross-sectional area normal to the bore's central axis at or near a downhole end portion of the bore, wherein the interior and downhole end portions are located at a distance from the discharge opening of the barrel and from the chamber, and wherein the first cross-sectional area is less than the second cross-sectional area to provide a relief volume at or near the downhole end portion of the bore for expansion of the pressurized working fluid.

US 6,339,993 B1

DEVICE FOR PASSING THROUGH PIPES

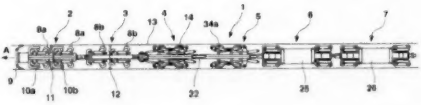
Corry Comello, Scarborough; Poul Laursen, and Jukka Maki, both of North York, all of Canada, assignors to PII Pipetronix GmbH, Stutensee, Germany

Filed Oct. 16, 1998, Appl. No. 173,444

Claims priority, application Germany, Oct. 22, 1997, 197 46 510

Int. Cl. F16L *55/44;* **G01M** *19/00*

U.S. Cl. 104—138.2 **19 Claims**



1. A device for passing through pipes in the form of a pig moving through the pipe and guided on an inner pipe wall, the device comprising:

a pig body;

support elements disclosed on a periphery of said pig body for guidance in the pipe;

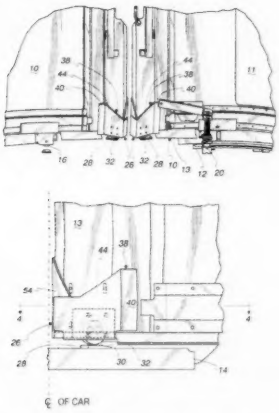
at least one seal member mounted to said pig body for advancement of the pig through the pipe; and

means for radially expanding said seal member when said pig body passes from a first pipe having a first standardized diameter into a second pipe having a second standardized diameter substantially larger than said first standardized diameter, wherein said radially expanded seal member has a plate-like shape and seats on an inner wall of said second pipe to drive the device in response to forces exercised on said seal member by a fluid medium transported through said second pipe.

US 6,339,994 B1
RAILCAR WITH TRACKLESS SUPPORT FOR RADIAL END DOOR

Daniel Joseph Kaplan, Norcross; Ralph Hartman Schorr, Lawrenceville; Ronny Lamar Allison, Winder, and Barney Russell Willoughby, Jr., Watkinsville, all of Ga., assignors to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed Aug. 4, 2000, Appl. No. 632,490
Int. Cl. B61D *17/00*
U.S. Cl. 105—404 **16 Claims**

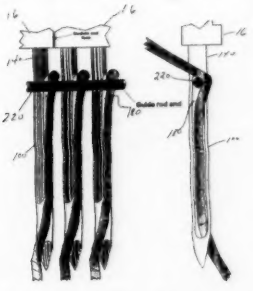


1. In a railcar for commercial transportation of automotive vehicles, said railcar having a body including a floor, and a pair of end doors movable between open and closed positions, each of said end doors having an inner portion, an outer portion, and one or more rollers on the outer portion, the improvement comprising a door-mounted nose support on the inner portion of at least one of said doors, said door-mounted nose support being unsupported by said railcar body when said door is open, but supported by said railcar body when said door is closed.

US 6,339,995 B1
NEEDLE FOR A TUFTING MACHINE

Ian Beverly, Blackburn, United Kingdom, assignor to Spencer Wright Industries, Inc., Dalton, Ga.

Filed Jul. 11, 2000, Appl. No. 614,002
Claims priority, application United Kingdom, Apr. 10, 2000, 0008798
This patent is subject to a terminal disclaimer.
Int. Cl. D05C *3/02;15/10;* **D05B** *85/02*
U.S. Cl. 112—80.16 **11 Claims**

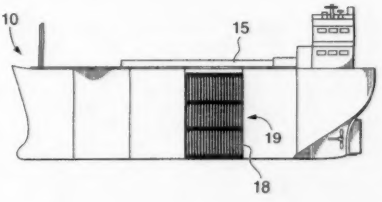


7. A needle module comprising a body member carrying a plurality of needles extending therefrom in side by side spaced apart relationship, each of said needles comprising an elongated body including a shank having a mounting portion, a blade extending from said shank to a point portion terminating in a tip, an eye adjacent said point portion extending transversely through said blade, and a yarn feed groove extending from the eye towards the shank, wherein the improvement comprises a rod attached to one of the shank and blade of each needle and projecting transversely therefrom.

US 6,339,996 B1
NATURAL GAS COMPOSITION TRANSPORT SYSTEM AND METHOD

Steven Campbell, St. John's, Canada, assignor to Mr. Steven Campbell, St. John's, Canada

Provisional application No. 60/129,878, filed on Apr. 19, 1999.
This application Apr. 19, 2000, Appl. No. 552,764.
Int. Cl. B63B *25/08*
U.S. Cl. 114—74 R **19 Claims**



1. A light-weight, ship-based system for transporting raw, unprocessed, compressed natural gas and or compressed natural gas liquid, said system comprising:

a ship;

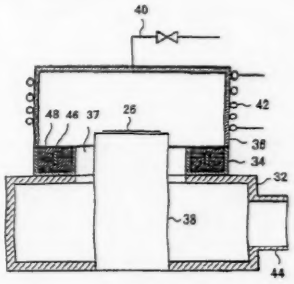
a plurality of composite material pressure vessels for containing said raw, unprocessed, compressed natural gas and said compressed natural gas liquid;

connection means for interconnecting said vessels, said vessels being integrally connected to interchange pressurized gas and liquid from said vessels to user selected other vessels, whereby weight distribution in said ship may be adjusted.

US 6,339,997 B1
PLASMA PROCESSING APPARATUS

Yukito Nakagawa, Tokyo, and Ken'ichi Takagi, Fukuoka-ken, both of Japan, assignors to Anelva Corporation, Fuchu, Japan

Filed Mar. 22, 2000, Appl. No. 453,894
Claims priority, application Japan, Apr. 12, 1999, 11-103946
Int. Cl. C23C *16/00*
U.S. Cl. 118—723 AN **10 Claims**



1. A plasma processing apparatus comprising:

a vacuum chamber having a gas delivery section and an exhaust port which is connected to a vacuum pump system, and at least a portion of the vacuum chamber is electrically conductive;

a substrate holder which is installed in an interior space of the vacuum chamber, the substrate holder having a substrate-carrying surface;

a power lead-in section for leading into said vacuum chamber alternating-current power for producing a plasma with inductive coupling;

the power lead-in section comprises a dielectric element, and at least a portion of said dielectric element is exposed to the interior space of said vacuum chamber; and

the exposed portion of the dielectric element is in a position which cannot be seen from the substrate-carrying surface of said substrate holder at the time of plasma processing, and the exposed portion is located between said substrate-carrying surface and said exhaust port.

US 6,339,998 B1

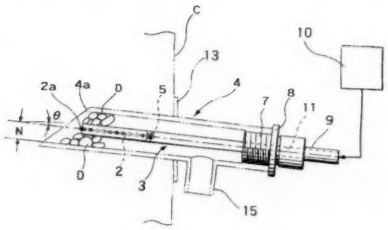
WATER FEED DEVICE FOR SMALL ANIMAL REARING APPARATUS

Motohiro Niki, Tokyo-To, and Atsushi Kidachi, Sakura, both of Japan, assignors to Motohiro Niki, et al., Tokyo-To, Japan

Filed Dec. 6, 1999, Appl. No. 454,650

Int. Cl. A01K *7/00*

U.S. Cl. 119—72.5 **5 Claims**



1. A water feed device for a small animal rearing apparatus, comprising:

a stationary sheathing pipe extending in a substantially horizontal direction and having an open end and a fixed opposite base end;

an elongated water feed member extending within said sheathing pipe to define a thin annular space (M) between the water feed member and the sheathing pipe, said water feed member being rockable within said sheathing pipe and having a fore end portion, to be touched by a small animal, located in said open end of the sheathing pipe and a rear end portion opposite the fore end portion;

a closing valve having an inlet side connected to a water source and an outlet side connected to said rear end portion of the water feed member;

said closing valve including holding means holding the rear end portion of the water feed member to normally maintain the water feed member at a valve closing position and to enable the water feed member to tilt to a valve opening position when a small animal touches the fore end portion of the water feed member, the closing valve being closed when the water feed member is at said valve closing position and being open to enable water to flow along the water feed member toward the fore end portion of the same when the water feed member is tilted to the valve opening position; and

a stationary protective pipe coaxially receiving the sheathing pipe therein so as to define a thicker annular space (N) surrounding the sheathing pipe, said thicker annular space having a thickness greater than that of the thin annular space (M).

US 6,339,999 B1

DETECTION OF ON-HEAT COWS

Robert James Newell, 13 Kiloanin Crescent, Banbridge, BT32 4NU, County Down, United Kingdom

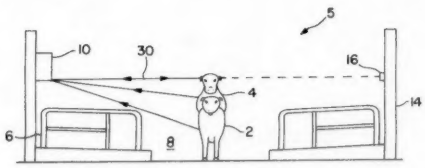
PCT No. PCT/GB98/02571, § 371 Date Jul. 14, 2000, § 102(e) Date Jul. 14, 2000, PCT Pub. No. WO99/09910, PCT Pub. Date Mar. 4, 1999

PCT Filed Aug. 26, 1998, Appl. No. 486,384

Claims priority, application United Kingdom, Aug. 27, 1997, 9718002

Int. Cl. A01K *29/00*

U.S. Cl. 119—421 **18 Claims**



1. A method of detecting a first cow when mounted by a second cow which comprises directing one or more beams of light wholly or substantially horizontally at one or more detectors, and at a level above the first cow and corresponding to an additional height of the second cow when the second cow mounts the first cow, such that the mounting of the first cow by the second cow breaks one or more of the beams of light to one or more of the detectors, and the one or each detected break causes activation of a selected one of an alarm means, a cow identification means or both.

US 6,340,000 B1

CLEANING POULTRY MANURE FROM SUPPORT SURFACES OF AN EGG-LAYING INSTALLATION

James S. Holtrop, Washington, and John R. Wiedemann, Fenton, both of Mo., assignors to Solutia Inc., St. Louis, Mo.

Filed Nov. 17, 1997, Appl. No. 972,206

Int. Cl. A01K *31/04*

U.S. Cl. 119—442 **5 Claims**

1. A method of cleaning poultry manure from support surfaces of an egg-laying installation which comprises contacting the manure with an aqueous solution obtained by combining water and one or more compounds selected from alkali metal polyphosphates, organo-phosphonates, alkali metal salts of nitriloacetic acid and alkali metal salts of ethylene diamine tetraacetic acid.

US 6,340,001 B1

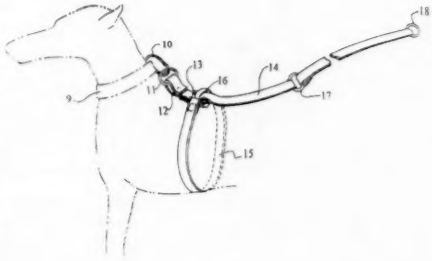
CONVERTIBLE ANIMAL CONTROL LEASH

John V. Hendrie, 555N. Broad St. Apt. 810 A, Doylestown, Pa. 18901

Filed Sep. 12, 2000, Appl. No. 659,327

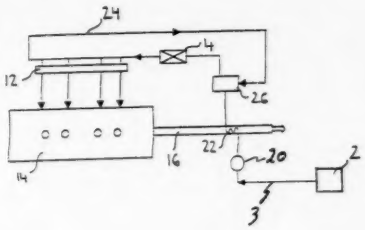
Int. Cl. A01K *27/00*

U.S. Cl. 119—792 **6 Claims**



1. A configurable dog leash, comprising:

a leash having a clip hook and ring at a front end and a rear end;
a short strap portion of said leash permanently attached to said clip hook at the front end;
a cinch-ring attached to said short strap portion; and
an elongate main portion of said leash permanently affixed to and extending rearward from said cinch-ring, further described in that a loop portion of said leash encircles the body of a dog and is affixed at a second point along its length to said cinch-ring by a knot located on the dog's back behind its shoulders.



US 6,340,002 B1

HEAT-RECOVERY STEAM GENERATOR

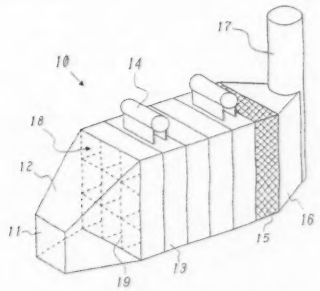
Erhard Liebig, Laufenburg, Germany, assignor to Alstom (Switzerland) Ltd, Baden, Switzerland

Filed Nov. 13, 2000, Appl. No. 709,326

Claims priority, application Germany, Dec. 9, 1999, 199 59 342

Int. Cl. F22G *1/16*

U.S. Cl. 122—7 R **5 Claims**



1. A heat-recovery steam generator (**10**), in particular for a gas-turbine plant of a combined-cycle power plant, the free cross section of flow of the heat-recovery steam generator (**10**) being subdivided into a plurality of parallel flow passages (**18**, **26–28**; **29–31**), and shut-off means (**21**, **21'**) being provided, by means of which the flow passages (**18**; **26–28**; **29–31**), in particular for purging the heat-recovery steam generator (**10**), can be shut off in a selective manner in order to prevent throughflow, characterized in that the heat-recovery steam generator (**10**) comprises at least one catalyst apparatus (**15**) lying in the flow, in that the catalyst apparatus (**15**) is subdivided into a plurality of catalyst sections (**20**) with regard to the cross section of flow, in that the individual catalyst sections (**20**) can be shut off on the inlet side and outlet side to prevent throughflow in order to regenerate the catalysts, and in that the flow passages (**18**; **26–28**; **29–31**) and catalyst sections (**20**) are allocated to one another in such a way that individual flow passages can be shut off by shutting off the allocated catalyst section(s).

US 6,340,003 B1

METHOD OF OPERATING A COMPRESSION IGNITION ENGINE

Peter Schoubye, Hørsholm; Poul Erik Højlund Nielsen, Fredensborg, and Niels Jørgen Blom, Hillerød, all of Denmark, assignors to Haldor Topsoe A/S, Lyngby, Denmark

Provisional application No. 60/169,934, filed on Dec. 10, 1999. This application Dec. 11, 2000, Appl. No. 732,756.

Int. Cl. F02B *43/10*

U.S. Cl. 123—3 **3 Claims**

1. Method of operating a compression engine on a dimethylether containing fuel obtained by conversion of methanol primary fuel, comprising the steps of:

(a) pressurizing the primary methanol fuel in its liquid form to a final engine injection pressure;
(b) preheating the pressurized primary fuel by heat contained in engine exhaust gas;
(c) introducing the primary fuel to a reactor and converting the primary fuel at injection temperature of the engine and the injection pressure to the dimethylether containing fuel by contact with a methanol dehydration catalyst in the reactor;
(d) withdrawing the dimethylether containing fuel from the reactor; and
(e) injecting the dimethylether containing fuel as produced in the reactor at the injection pressure and temperature as the sole fuel directly into the engine.

US 6,340,004 B1

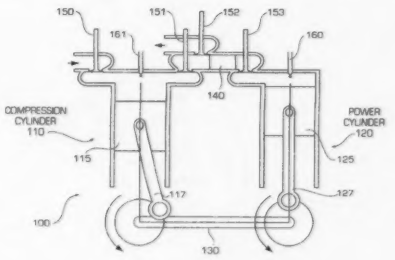
INTERNAL COMBUSTION ENGINE WITH REGENERATOR AND HOT AIR IGNITION

Richard Patton, 112 Planters Row, Starkville, Miss. 39759

Provisional application No. 60/151,994, filed on Aug. 31, 1999. This application Aug. 30, 2000, Appl. No. 651,482.

Int. Cl. F02B *47/00*; **F01B** *29/04*

U.S. Cl. 123—25 C **24 Claims**



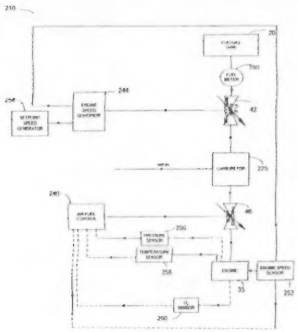
1. An internal combustion engine, comprising:
a compression cylinder having an intake valve and at least one transfer compression valve;
a compression piston mounted for reciprocation inside said compression cylinder;
a power cylinder having at least one transfer power valve;
a power piston mounted for reciprocation inside said power cylinder;
a passage connected between each transfer compression valve and transfer power valve, said passage including a regenerator and a regenerator exhaust valve between said transfer compression valve and said regenerator.

US 6,340,005 B1

AIR-FUEL CONTROL SYSTEM

Leslie Allan Keast, Fort Saskatchewan, and Howard Leigh Malm, Coquitlam, both of Canada, assignors to REM Technology, Inc., Port Coquitlam, Canada

Filed Apr. 18, 2000, Appl. No. 551,748
Int. Cl. F02B *3/00*
U.S. Cl. 123—27 GE **10 Claims**



1. An air-fuel control system for a natural gas engine provided with an air-fuel mixing device, comprising:

means for establishing a speed set point;

means for determining an actual engine speed;

a governor control unit for generating a fuel command based on said speed set-point and said actual engine speed;

a fuel flow regulator coupled to said governor control unit for regulating the flow of fuel to the air-fuel mixing device in response to said fuel command to produce an air-fuel mixture; and

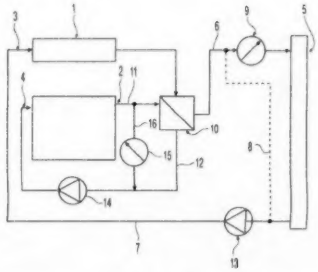
air-fuel flow control means for regulating the flow of said air-fuel mixture from said air-fuel mixing device to an intake manifold of said engine.

US 6,340,006 B1

INTERNAL COMBUSTION ENGINES HAVING SEPARATED COOLING CIRCUITS FOR THE CYLINDER HEAD AND THE ENGINE BLOCK

Dante Rodolfo Malatto; Fiorello Losano; Sergio Occella, and Vladimiro Patrone, all of Orbassano, Italy, assignors to C.R.F. Societa Consortile per Azioni, Turin, Italy

Filed Mar. 13, 2000, Appl. No. 523,959
Claims priority, application Italy, Mar. 11, 1999, TO99A0186
Int. Cl. F01P *3/00*
U.S. Cl. 123—41.29 **7 Claims**



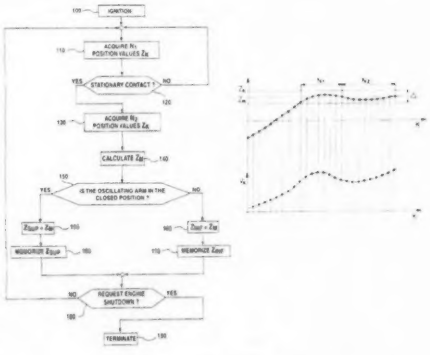
1. An internal combustion engine comprising an engine block and a cylinder head wherein said engine includes a cooling system having a first cooling circuit for the cylinder head of the engine and a second cooling circuit for the engine block which are completely separated from each other, a first cooling fluid and a second cooling fluid in said first and second circuits respectively which are never mixed with each other and a liquid/liquid heat exchanger having passages respectively interposed in the first circuit for cooling the cylinder head and in the second circuit for cooling the engine block for transferring heat between said two fluids, wherein the cooling circuit of the cylinder head comprises a radiator, an output conduit for feeding the first cooling fluid from the cylinder head to the radiator, a return conduit for returning the first cooling fluid from the radiator to the cylinder head, a bypass conduit for bypassing the radiator, a first flow regulating valve for regulating the flow of fluid through the radiator and a pump for activating the circulation of the first cooling fluid in the first cooling circuit and wherein a radiator for heating a motor vehicle passenger compartment is disposed in said bypass conduit.

US 6,340,007 B2

METHOD FOR ESTIMATING THE END-OF-STROKE POSITIONS OF MOVING MEMBERS OF ELECTROMAGNETIC ACTUATORS FOR THE ACTUATION OF INTAKE AND EXHAUST VALVES IN INTERNAL COMBUSTION ENGINES

Nicola Di Lieto, Salerno; Gilberto Burgio, Ferrara, and Roberto Flora, Forli', all of Italy, assignors to Magneti Marelli S.p.A., Milan, Italy

Filed Dec. 20, 2000, Appl. No. 739,799
Claims priority, application Italy, Dec. 23, 1999, BO99A0710
Int. Cl. F01L *9/04*
U.S. Cl. 123—90.11 **6 Claims**



1. A method for estimating the end-of-stroke positions of moving members of electromagnetic actuators for the actuation of intake and exhaust valves in internal combustion engines, in which an actuator (**1**) is coupled to a respective intake or exhaust valve (**2**) and comprises a moving member (**3**) actuated magnetically in order to control the movement of the valve (**2**), a sensor (**11**) supplying a position signal (V_Z) representative of a current position (Z) of this moving member (**3**) and a first and a second electromagnet (**6***a*, **6***b*) disposed on opposite sides of this moving member (**3**), wherein this moving member (**3**) can move between a first end-of-stroke position (Z_{SUP}) in which it is disposed in contact with the first electromagnet (**6***a*) and a second end-of-stroke position (Z_{INF}) in which it is disposed in contact with the second electromagnet (**6***b*), which method is characterised in that it comprises the stages of:

a) checking whether a condition of stationary contact of the moving member (**3**) exists (**110**, **120**); and

b) determining a value (Z_M) correlated with this current position (Z) (**130**, **140**), if the condition of stationary contact is verified.

US 6,340,008 B1

METHOD FOR CONTROLLING AN ELECTROMAGNETIC ACTUATOR FOR ACTIVATING A GAS EXCHANGE VALVE ON A RECIPROCATING INTERNAL COMBUSTION ENGINE

Christian Boie; Hans Kemper, both of Aachen; Lutz Kather, Würselen, and Gilles Corde, Aachen, all of Germany, assignors to FEV Motorentechnik GmbH, Aachen, Germany

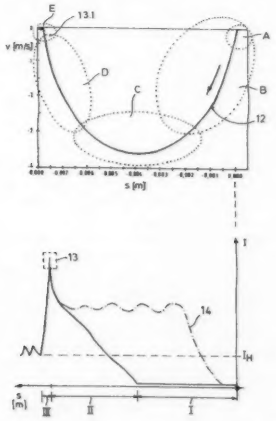
PCT No. PCT/EP00/04584, § 371 Date Jan. 29, 2001, § 102(e) Date Jan. 29, 2001, PCT Pub. No. WO00/73634, PCT Pub. Date Dec. 7, 2000

PCT Filed May 20, 2000, Appl. No. 744,688

Claims priority, application Germany, May 27, 1999, 199 24 374; Apr. 20, 2000, 100 19 745

Int. Cl. F01L *9/04*

U.S. Cl. 123—90.11 **6 Claims**



1. A method for controlling an electromechanical actuator for actuating a cylinder valve in a piston-type internal-combustion engine, having two spaced electromagnets, between which an armature that acts on the cylinder valve to be actuated is guided to move back and forth, counter to the force of at least one restoring spring, with a control alternately supplying the electromagnets with a capturing current and a sensor element detecting the armature movement on its path from the one pole face to the other pole face, specifically such that, in a first phase (I), beginning with the initiation of the detachment of the armature from the pole face of the retaining electromagnet, the sensor element detects actual values of the armature movement; in a second phase (II), the control actuates the capturing electromagnet, as a function of the detected actual values of the armature movement, and with respect to the current supply, such that the armature is moved in a predetermined spacing range from the pole face of the capturing electromagnet, and with an acceleration that approaches zero; and in a third phase (III), the current supply to the capturing electromagnet is controlled such that the armature impacts the pole face at a predeterminable minimum speed.

US 6,340,009 B1

INTERNAL COMBUSTION ENGINE

Friedrich Boecking, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE99/02510, § 371 Date Sep. 18, 2000, § 102(e) Date Sep. 18, 2000, PCT Pub. No. WO00/09866, PCT Pub. Date Feb. 24, 2000

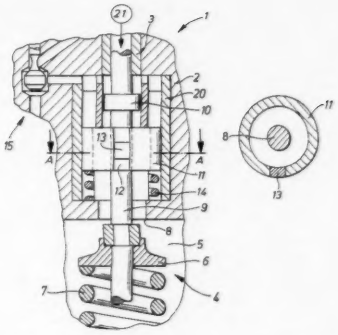
PCT Filed Aug. 11, 1999, Appl. No. 529,512

Claims priority, application Germany, Aug. 14, 1998, 198 36 902

Int. Cl. F01L *1/34*

U.S. Cl. 123—90.15 **17 Claims**

1. An internal combustion engine comprising at least one combustion chamber (**5**), the combustion chamber has at least two



hydraulically or pneumatically actuatable valves (**4**) that are each guided in a respective valve guide (**3**), an inlet valve for admitting fuel or a fuel-air mixture into the combustion chamber (**5**) before the combustion event and an outlet valve for exhausting the combustion exhaust gases from the combustion chamber (**5**) after the combustion event, the valves (**4**) are fixed relative to the valve guide (**3**) by means of an electrically actuatable clamping element.

US 6,340,010 B1

VALVE OPERATING DEVICE FOR INTERNAL COMBUSTION ENGINE WITH VARIABLE VALVE TIMING AND VALVE-LIFT CHARACTERISTIC MECHANISM

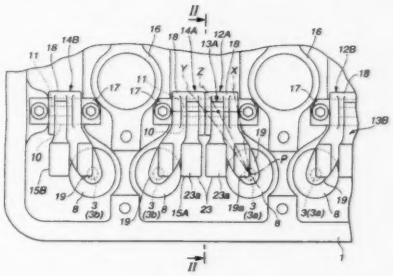
Seinosuke Hara; Makoto Nakamura, and Yoshihiko Yamada, all of Kanagawa, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Jul. 7, 2000, Appl. No. 611,559

Claims priority, application Japan, Jul. 8, 1999, 11-193820

Int. Cl. F01L *13/00*

U.S. Cl. 123—90.16 **26 Claims**



1. A valve operating device for an internal combustion engine having at least two engine valves per cylinder, said valve operating device enabling both valve timing and valve-lift characteristic to be varied depending on engine operating conditions, comprising:

a camshaft adapted to be driven by a crankshaft;

at least one cam pair including a low-speed cam and a high-speed cam, each operating an associated valve of at least two engine valves included in a cylinder, the cam pair being formed on said camshaft;

a main rocker shaft supported on a cylinder head, the main rocker shaft comprising a plurality of divided rocker shaft members supported on the cylinder head and including relatively short endmost rocker shaft members respectively located closer to both ends of the engine and relatively long intermediate divided rocker shaft members each being disposed between associated two cylinders adjoining to each other;

at least one rocker arm set including:

(a) a low-speed rocker arm having a first follower driven by the low-speed cam for operating the associated valve during a low-speed cam operating mode and supported by said main rocker shaft; and

(b) a high-speed rocker arm having a second follower driven by the high-speed cam for operating the associated valve during a high-speed cam operating mode and mounted on the low speed rocker arm, the second follower of the high-speed rocker arm being closely juxtaposed to the first follower and located within a dead space defined in an outside of the at least two engine valves included in the engine cylinder; and

a mode switching device provided for switching from one of the low-speed and high-speed cam operating modes to the other depending on the engine operating conditions, said mode switching device initiating the low-speed cam operating mode by disconnecting the low-speed rocker arm from the high-speed rocker arm, and initiating the high-speed cam operating mode by connecting the low-speed rocker arm to the high-speed rocker arm.

US 6,340,011 B1

INTAKE DUCT FOR AN INTERNAL COMBUSTION ENGINE

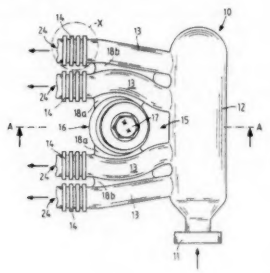
Herbert Jainek, Heilbronn, Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Jul. 13, 2000, Appl. No. 615,315

Claims priority, application Germany, Jul. 15, 1999, 199 33 032

Int. Cl. F02M *35/10*

U.S. Cl. 123—184.24 **15 Claims**



1. An intake duct for an internal combustion engine, which has a manifold with an inlet for combustion air and at least two intake tubes with outlets at ends associated with cylinders of the engine,

wherein an intervening space is provided, which is formed by adjacent intake tubes for accommodating an additional working element of the internal combustion engine, and

wherein the working element is a filter housing having a filter flange which can be connected to the internal combustion engine such that at least one connection to the oil circuit of the internal combustion engine is formed.

US 6,340,012 B1

OIL PAN FOR INTERNAL COMBUSTION ENGINE

Akira Yamashita, and Masatoshi Omura, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

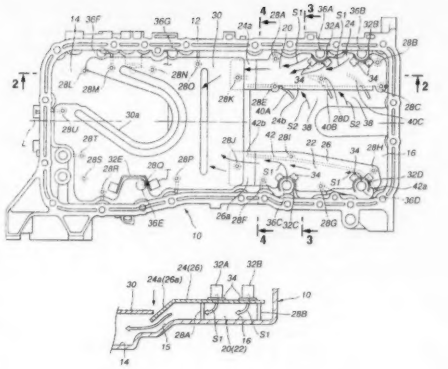
Filed May 5, 2000, Appl. No. 564,984

Claims priority, application Japan, May 7, 1999, 11-126756

Int. Cl. F02F *7/00*

U.S. Cl. 123—195 C **32 Claims**

1. An oil pan for collecting a lubricating oil drained from an internal combustion engine and a lubricating oil dripped from a



crankshaft of the engine, said oil pan being disposed near the crankshaft, comprising:

a wall including a first oil collecting portion and a second oil collecting portion that are adapted for collecting the lubricating oils, said first and second oil collecting portions being connected with and adjacent to each other in a longitudinal direction of the engine;

a first baffle plate cooperating with the first oil collecting portion of the wall to define a first oil passage extending along the longitudinal direction of the engine, said first oil passage being disposed downstream of a rotating direction of the crankshaft perpendicular to the longitudinal direction of the engine, said first oil passage having an inlet portion open in a direction opposed to the rotating direction of the crankshaft;

a second baffle plate cooperating with the first oil collecting portion of the wall to define a second oil passage extending along the longitudinal direction of the engine and spaced from the first oil passage in a lateral direction of the engine perpendicular to the longitudinal direction, said oil passage being disposed upstream of the rotating direction of the crankshaft; and

a plurality of oil guides guiding the lubricating oil drained from the engine to the first and second oil passages, said plurality of oil guides being disposed on the first and second baffle plates, respectively;

wherein said first and second oil passages are so arranged as to force the lubricating oil collected at the first oil collecting portion toward the second oil collecting portion.

US 6,340,013 B1

FOUR-STROKE INTERNAL COMBUSTION ENGINE WITH RECUPERATOR IN CYLINDER HEAD

Richard Berkeley Britton, P.O. Box 7451, Charlottesville, Va. 22906-7451

Provisional application No. 60/051,714, filed on Jul. 3, 1997. This application Jul. 3, 1998, Appl. No. 110,747.

Int. Cl. F02B *19/02*

U.S. Cl. 123—255 **11 Claims**

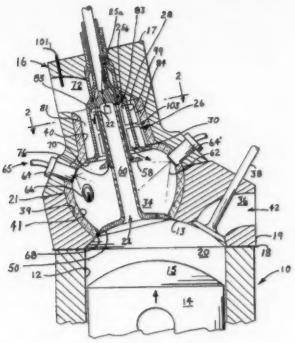
1. In a four-stroke internal combustion engine having a cylinder with a piston reciprocating therein between limits defining a top dead center and a bottom dead center, the improvement comprising:

means defining a recuperative cylinder head having an internal recuperator coupled to an internal combustion chamber;

means for selectively controlling the flow of air from the atmosphere into said cylinder;

means for selective control of compressed air passing through said recuperator in a first direction to said combustion chamber;

means for adding fuel to said compressed air and for igniting same and for selectively controlling the release of the gaseous



ignition products to said cylinder to urge said piston toward said bottom dead center; and

means for selectively controlling the flow of said gaseous ignition products from said cylinder via said combustion chamber and said recuperator in reverse to said first direction to release said gaseous products to the atmosphere.

US 6,340,014 B1

CONTROL FOR DIRECT FUEL INJECTION SPARK IGNITION INTERNAL COMBUSTION ENGINE

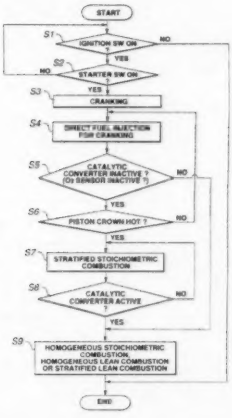
Masayuki Tomita, Milton Keyns, United Kingdom, and Kimiyoshi Nishizawa, Yokohama, Japan, assignors to Nissan Motor Co., Inc., Yokohama, Japan

Filed Mar. 17, 1999, Appl. No. 271,205

Claims priority, application Japan, Mar. 17, 1998, 10-066927; Feb. 24, 1999, 11-046612

Int. Cl. F02B *17/00*

U.S. Cl. 123—295 **22 Claims**



1. An engine system comprising:

a direct injection spark ignition internal combustion engine which comprises a fuel injector for injecting fuel directly into a combustion chamber of the engine, and a spark plug for igniting an air fuel mixture in the combustion chamber; and

an engine controller for operating the engine in a first stratified charge combustion mode for producing a substantially stoichiometric air fuel mixture concentrated around the spark plug at a time of ignition in a predetermined engine operating region by variably controlling ignition timing and at least one of fuel injection quantity and timing during a compression stroke, for detecting a predetermined request condition requesting a temperature increase of a catalytic emission control device disposed in an exhaust passage of the engine, and for operating the engine in a second stratified charge combustion mode for producing a richer-than-stoichiometric air fuel mixture of a rich air fuel ratio richer than a stoichiometric ratio concentrated around the spark plug at the time of ignition by controlling the fuel injection quantity and fuel injection timing of compression stroke fuel injection on the compression stroke by the fuel injector and the ignition timing of the spark plug when the predetermined request condition is detected,

wherein the richer-than-stoichiometric air fuel mixture concentrated around the spark plug at the time of ignition is in an ignitable atomized state with an ignitable air fuel ratio,

and wherein the controller sets a fuel atomization interval from a time of a compression stroke fuel injection to the time of ignition longer in the second stratified combustion mode than in the first stratified combustion mode.

US 6,340,015 B1

FUEL INJECTION VALVE WITH INTEGRATED SPARK PLUG

Walter Benedikt, Kornwestheim; Franz Rieger, Schwieberdingen, and Rainer Norgauer, Ludwigsburg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

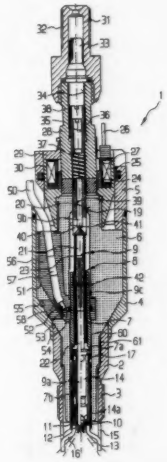
PCT No. PCT/DE99/00861, § 371 Date May 25, 2000, § 102(e) Date May 25, 2000, PCT Pub. No. WO00/00737, PCT Pub. Date Jan. 6, 2000

PCT Filed Mar. 24, 1999, Appl. No. 486,528

Claims priority, application Germany, Jun. 27, 1998, 198 28 848

Int. Cl. F02M *57/06;61/16*

U.S. Cl. 123—297 **16 Claims**



1. A fuel injection valve associated with an integrated sparkplug for achieving a direct injection of a fuel into a combustion chamber of an internal combustion engine and for igniting the fuel injected into the combustion chamber, comprising:

a valve body;

a valve needle;

a valve closing body operated by the valve needle and for forming a seal seat with the valve body;

an insulating body radially surrounding the valve body and at least partially surrounding the valve needle, wherein the valve needle includes:

a first metal guide section guided in the valve body,

a second metal guide section guided in the insulating body, and

an insulating section arranged between the first metal guide section and the second metal guide section, the first metal guide section and the second metal guide section being connected in a positive manner to the insulating section;

a housing body radially surrounding the insulating body at least in part; and

at least one ignition electrode provided on at least one of the valve body and the housing body.

US 6,340,016 B1

STARTING DEVICE AND CONTROL METHOD THEREOF FOR DIRECT-INJECTION INTERNAL COMBUSTION ENGINE

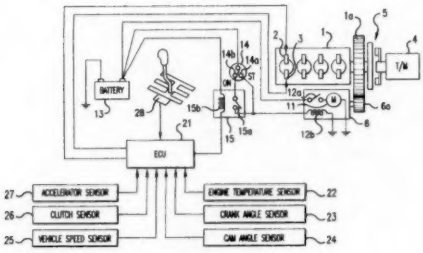
Katsunori Ueda, Okazaki; Kuniaki Kaihara, Toyota; Hiromitsu Ando, Okazaki, and Jun Takemura, Toyota, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 2000, Appl. No. 527,990

Claims priority, application Japan, Mar. 18, 1999, 11-073362; Dec. 17, 1999, 11-359083

Int. Cl. F02M *31/00*

U.S. Cl. 123—305 **24 Claims**



1. A starting device for a direct-injection internal combustion engine, in which fuel can be injected directly into cylinders, comprising:

cylinder identifying means for identifying at least a compression stroke cylinder in a compression stroke when the internal combustion engine is stopped;

start request determining means for determining whether there is an engine start request for the internal combustion engine; and

start control means for injecting fuel into the compression stroke cylinder identified by the cylinder identifying means at a start of the internal combustion engine, when it is determined by the start request determining means that there is an engine start request for the internal combustion engine.

US 6,340,017 B1

FUEL INJECTOR

Malcolm David Dick, Lambert, United Kingdom, assignor to Delphi Technologies, Inc., Troy, Mich.

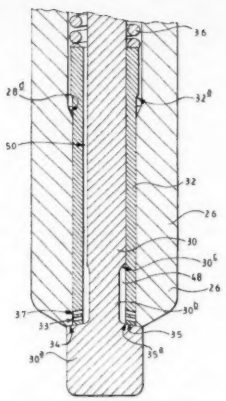
Filed Aug. 11, 2000, Appl. No. 637,944

Claims priority, application United Kingdom, Aug. 18, 1999, 9919424

Int. Cl. F02M *37/04;59/00*

U.S. Cl. 123—467 **11 Claims**

1. An outwardly opening fuel injector comprising a valve needle movable within a bore provided in a nozzle body and engageable with a seating to control the supply of fuel from the bore, the valve needle being biased towards its seating and being moveable outwardly of the bore to move the valve needle away from its seating, the fuel injector further comprising a sleeve member which is moveable with the valve needle, the valve needle and the sleeve



member together defining a chamber for fuel such that, in use, fuel pressure within the chamber serves to dilate the sleeve member to reduce fuel leakage from the injector.

US 6,340,018 B1

CONTROL VALVE FOR A FUEL INJECTION VALVE

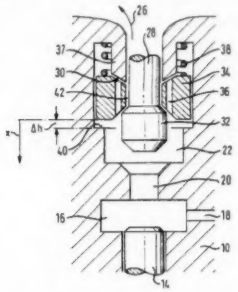
Patrick Mattes, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 22, 2000, Appl. No. 642,773

Claims priority, application Germany, Aug. 25, 1999, 199 40 292

Int. Cl. F02M *37/04*

U.S. Cl. 123—467 **3 Claims**



1. A control valve for a fuel injection valve, comprising a valve needle (**28**), which is displaceable in a control chamber (**22**) that is provided with an inlet (**20**), an outlet (**26**), a valve needle seat (**30**), and a throttle seat (**30'**), a throttle ring (**34**) is disposed on the valve needle (**28**) and the throttle ring is provided with throttle bores (**36**), the throttle bores extend parallel to a longitudinal axis of the valve needle (**28**), and dimensions of the throttle ring (**34**) and valve needle (**28**) are selected such that an outlet conduit (**42**) is formed between an outer wall of the valve needle and an inner wall of the throttle ring.

US 6,340,019 B1

FUEL RAIL MOUNTING BRACKET WITH ISOLATOR

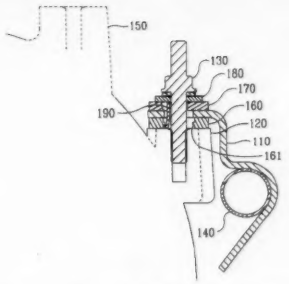
Edgar Samuel Eshleman, Bloomfield, and Gary John Deangelis, Spencerport, both of N.Y., assignors to Delphi Technologies, Inc., Troy, Mich.

Filed Sep. 11, 2000, Appl. No. 659,174

Int. Cl. F02M *37/04*

U.S. Cl. 123—469 **20 Claims**

1. An isolator assembly for a fuel rail system, said isolator assembly comprising:



a fuel rail delivering fuel from a fuel source to at least fuel injector;

a bracket extending from said fuel rail;

a first washer disposed on a first side of said bracket;

an isolator sleeve disposed on a second side of said bracket opposite said first side, said isolator sleeve positively engaging said first washer.

US 6,340,020 B2

STROKE IDENTIFYING UNIT OF A FOUR-STROKE ENGINE

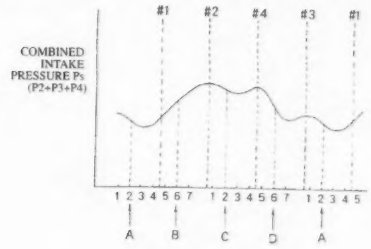
Ryutaro Yamazaki; Nobuhiko Ito, and Yasuo Iwata, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of application No. 09/023,705, filed on Feb. 13, 1998, now Pat. No. 6,170,322. This application Dec. 22, 2000, Appl. No. 742,104.

Claims priority, application Japan, Feb. 13, 1997, 9-029255

Int. Cl. F02M *51/00*

U.S. Cl. 123—478 **6 Claims**



1. A fuel injected four-stroke engine comprising:

an engine block;

a crankshaft disposed in said engine block;

an encoder attached to said crankshaft;

a reader proximate said crankshaft for detecting said encoder and for generating an angular position signal in response to detecting said encoder;

a plurality of cylinders in said engine block;

a plurality of intake paths, each communicating with a respective one of said plurality of cylinders;

a plurality of pressure sensors, each communicating with a respective one of said plurality of intake paths, and each generating a pressure signal representative of a pressure within the respective intake path;

a plurality of fuel injectors, each communicating with a respective one of said plurality of intake paths;

an intake pressure memory for storing a combined value of the pressure signals occurring at a predetermined angular position of the crankshaft; and

a control unit for controlling an injection timing of said plurality of fuel injectors based upon a comparison between a previously stored combined value of the pressure signals at the predetermined angular position of the crankshaft and a presently detected combined value of the pressure signals at the predetermined angular position of the crankshaft.

US 6,340,021 B1

INTERNAL COMBUSTION ENGINE AND ITS OPERATING MODE

Bernhard Feistritzer, Kohlplatzstrasse 23/4, A-5451 Tenneck, Austria

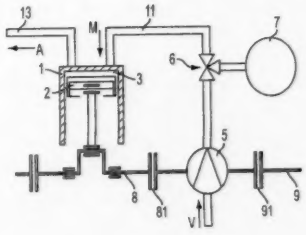
PCT No. PCT/AT98/00199, § 371 Date Feb. 23, 2000, § 102(e) Date Feb. 23, 2000, PCT Pub. No. WO99/10637, PCT Pub. Date Mar. 4, 1999

PCT Filed Aug. 25, 1998, Appl. No. 485,674

Claims priority, application Austria, Aug. 25, 1997, 1416/97

Int. Cl. F02B *75/02;* **F02G** *3/00*

U.S. Cl. 123—543 **22 Claims**



1. An internal combustion engine comprising:

at least one cylinder;

a cylinder head;

at least one piston having a top dead center position wherein the piston is disposed near the cylinder head and a bottom dead center position wherein the piston is disposed away from the cylinder head;

the piston and cylinder being movable with respect to one another;

a crankshaft;

at least one intake valve and at least one exhaust valve, each valve being controlled to respectively allow gas intake and exhaust gas discharge; and

a movable recuperator disposed between the cylinder head and the piston, the recuperator allowing at least one of:

intake gas to flow from the intake valve and through the recuperator, and

exhaust gas to flow through the recuperator and to the exhaust valve,

wherein the recuperator moves only when the piston is in a region of the top dead center position and in a region of the bottom dead center position.

US 6,340,022 B1

BLADE AND ARBOR ADAPTOR FOR CIRCULAR SAW

Daniel J. Schroer, 6127 Kenwood, Kansas City, Mo. 64110

Filed Oct. 1, 1999, Appl. No. 411,438

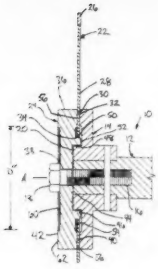
Int. Cl. B24B *23/00;* **B28D** *1/04*

U.S. Cl. 125—13.01 **26 Claims**

1. An arbor adaptor for mounting a blade to a circular saw, said arbor adaptor comprising:

a body including an aperture adapted to receive a fastener for mounting to a saw therethrough; and

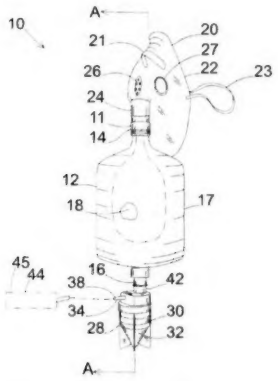
a first engagement side on the body including a central recess, a friction surface for clamping a blade to a saw, said friction surface being spaced radially outward from said central recess



and extending normally outwardly from said recess, and a blade positioning ring configured to removably receive a succession of respective saw blades thereon and located radially intermediate said central recess and said friction surface and having a substantially centrally positioned axis of rotation, said blade positioning ring including a inner rim extending substantially normal to said central recess and an outer rim which is substantially normal to said friction surface and is substantially circular, said blade positioning ring extending normally from said central recess a greater distance than said friction surface,

wherein the blade positioning ring has an axis of rotation centrally located on the arbor adaptor and the aperture has an axis which is offset from and displaced relative to the axis of rotation of the blade positioning ring.

US 6,340,023 B2
REBREATHER NEBULIZER DEVICE
John I. Elkins, 151 Montclair Ave., St. James, N.Y. 11780
Provisional application No. 60/204,953, filed on May 17, 2000. This application Dec. 14, 2000, Appl. No. 737,162.
Int. Cl. A61M *11/00*
U.S. Cl. 128—200.21 **11 Claims**



1. An apparatus for delivering a highly concentrated mixture to a patient comprising:

a collapsible membrane defining a chamber therein, said membrane further defining a first opening and a second opening in communication with said chamber;

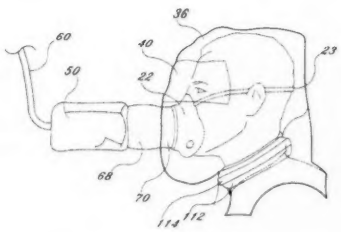
a mask defining an enclosure having a first passageway in communication with said first opening;

a nebulizer having a body defining a reservoir for holding a liquid therein, said body including an inlet orifice and an outlet orifice, said outlet orifice in communication with said second opening of said membrane;

a pressurized gas source containing a pressurized gas, said pressurized gas source in communication with said inlet orifice for providing said pressurized gas to said nebulizer;

wherein when said pressurized gas from said pressurized gas source enters said nebulizer, said pressurized gas mixes to form a mixture with said liquid inside said reservoir of said nebulizer, wherein said mixture is forced from said reservoir to said chamber before freely communicating in either direction between said chamber and said mask.

US 6,340,024 B1
PROTECTIVE HOOD AND ORAL/NASAL MASK
Michael J. Brookman, Davie, and Eric M. Hiner, Plantation, both of Fla., assignors to DME Corporation, Ft. Lauderdale, Fla.
Continuation of application No. 08/001,339, filed on Jan. 7, 1993, now abandoned. This application Nov. 4, 1994, Appl. No. 334,751.
Int. Cl. A61M *16/00;16/22*
U.S. Cl. 128—201.25 **19 Claims**



1. A device for protection to a user, from heat, noxious and/or toxic gases during hypoxic and fire emergencies, the device usable alone or the device usable in conjunction with a breathable oxygen source comprising:

an exclusively dry multi-stage filtering means for converting atmospheric gases into breathable air;

a mask having a first and second mask aperture, said mask constructed and arranged to conform to the contours of a user's mouth and nose region, said mask connected to said means for converting at said first mask aperture, said mask having an exhalation valve;

means for retaining said mask tightly on a user's mouth and nose regions at said second mask aperture, said means for retaining connected to said mask;

wherein said device provides protection to a user, from heat, noxious and/or toxic gases which might be present during hypoxic and fire emergencies;

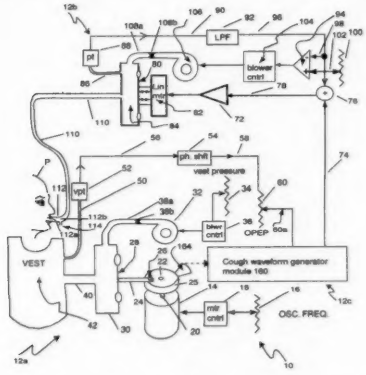
a hood constructed of a non-flammable, gas impermeable material, said hood covering a user's head and neck area, said hood having an interior surface and an exterior surface, said means for converting attached to said hood;

means for viewing during hypoxic and fire emergencies attached to said hood and disposed substantially in front of a user's eyes;

means for preventing fogging of said means for viewing during exhalation by said user, said means for preventing fogging disposed on said hood and is adjacent said exhalation valve when said hood is properly deployed; and

means for preventing said atmospheric air from locating within said hood, said means for preventing attached to said interior surface of said hood.

US 6,340,025 B1
AIRWAY TREATMENT APPARATUS WITH AIRFLOW ENHANCEMENT
Nicholas P. Van Brunt, White Bear Lake, Minn., assignor to American Biosystems, Inc., St. Paul, Minn.
Filed Oct. 4, 1999, Appl. No. 412,768
This patent is subject to a terminal disclaimer.
Int. Cl. A61M *16/00*
U.S. Cl. 128—204.18 **19 Claims**

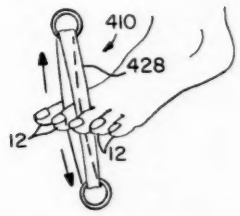


1. A chest wall oscillation method for removal of mucus from a lung of a patient, the method comprising:

applying an oscillating compressive force to a chest of the patient to cause displacement of chest cavity volume, the oscillating compressive force including a steady state force component and an oscillating force component; and

supplying air pressure to a mouthpiece in communication with a mouth of the patient in a synchronized relationship to the oscillating compressive force to enhance mucus removal from the lung of the patient.

US 6,340,026 B1
CARING DEVICE FOR TOES
Ada Shapiro, 92 Candy La., Syosset, N.Y. 11791
Filed Oct. 16, 2000, Appl. No. 688,911
Int. Cl. A45D *29/00*
U.S. Cl. 132—73 **16 Claims**



1. A caring device for toes, comprising:

a) a body for moving longitudinally and simultanously between at least one pair of adjacent toes, and having a length; and

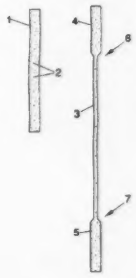
b) a pair of handle extending from said body for holding by the hands during use;

wherein said body is slender and elongated for moving longitudinally between one pair of adjacent toes, and has a pair of free ends; wherein said body is flat and formed into endless loop for moving longitudinally and simultaneously between two pair of adjacent toes by capturing and intermediate toe therein, and has a pair of opposing extremes;

wherein each handle is a ring that has said endless loop pass freely therethrough so as to allow each ring to move in said endless loop, and when in use, are disposed at said pair of opposing extremes of said endless loop; and

wherein said ring is rigid and cordless so as to facilitate said ring in moving in said endless loop and for facilitating grasping thereof by the hands, as opposed to a cord which would collapse onto itself.

US 6,340,027 B1
EXTENSIBLE POLISHING MONO-FILAMENT DENTAL FLOSS
Leif Hagne, Liechtenstein, and Lars Jönsson, Valdemarsvid, both of Sweden, assignors to Athena Nordic AB, Falun, Sweden
PCT No. PCT/SE99/01376, § 371 Date Feb. 16, 2001, § 102(e) Date Feb. 16, 2001, PCT Pub. No. WO00/09034, PCT Pub. Date Feb. 24, 2000
PCT Filed Aug. 16, 1999, Appl. No. 763,161
Claims priority, application Switzerland, Aug. 17, 1998, 9802746
Int. Cl. A61C *15/00*
U.S. Cl. 132—321 **25 Claims**



1. Monofilament dental floss/tape of polymer material, characterized in that the dental floss/tape (**1**) is arranged to be stretched to a permanent deformation prior to its use, in order to increase its length and also reduce its cross-sectional area.

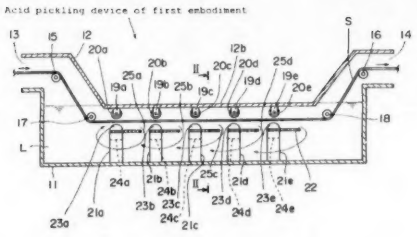
US 6,340,028 B1
PICKLING DEVICE
Etsuro Hirai; Takumi Furuya; Masato Saka, and Nobuyuki Taniguchi, all of Hiroshima, Japan, assignors to Mitsubishi Heavy Industries, Ltd., Tokyo, Japan
PCT No. PCT/JP99/01059, § 371 Date Oct. 13, 1999, § 102(e) Date Oct. 13, 1999, PCT Pub. No. WO99/46426, PCT Pub. Date Sep. 16, 1999
PCT Filed Mar. 5, 1999, Appl. No. 402,896
Claims priority, application Japan, Mar. 11, 1998, 10-59306
Int. Cl. B08B *3/04*
U.S. Cl. 134—122 R **4 Claims**

1. An acid pickling device for acid pickling a strip plate by causing the strip plate to travel in an acid pickling tank filled with an acid liquid, comprising:

an immersion guide roll for guiding the strip plate while the strip plate travels in the acid pickling tank, said immersion guide roll being provided on the acid pickling tank lid;

a skid for guiding the strip plate while the strip plate travels in the acid pickling tank, said skid being provided on a support block installed at a bottom of the acid pickling tank; and

an acid pickling tank lid for covering a top of the acid pickling tank, a central part of the acid pickling tank lid being located



at a lower position than a liquid level of the acid liquid in the acid pickling tank such that the lid covers a free surface of the acid liquid,

wherein the support block is provided with a bottom plate positioned below the skid and extends along a direction of travel of the strip plate.

US 6,340,029 B1

APPARATUS FOR OPENING/CLOSING A VALVE AND METHOD THEREOF

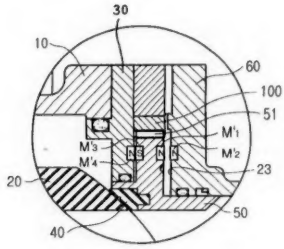
Duk-Jo Jun, 701-2202 World Apt., 1346 Sadong, Ansan, Kyungki-do, Rep. of Korea

Filed Jan. 27, 2000, Appl. No. 492,537

Claims priority, application Rep. of Korea, Jan. 26, 1999, 99-2467; Jan. 24, 2000, 00-3219

Int. Cl. F16K *25/00*

U.S. Cl. 137—1 **20 Claims**



1. A method for opening/closing a valve, comprising the steps of:

providing a valve body, a rotating member disposed within said valve body, a first actuator coupled to said rotating member through said valve body and rotating said rotating member to close and open said valve, a seat member disposed adjacent to said rotating member, and a second actuator communicated with said seat member to move said seat member toward and away from said rotating member;

rotating said rotating member in a first direction for opening said valve;

rotating said rotating member in a second direction for closing said valve;

moving said seat member to be contacted with said rotating member closing said valve;

providing a plurality of magnetic members mounted on both sides of said seat member and a side of said valve body facing said side of said seat member; and

moving said seat member so that a first polarity and a second polarity of said magnetic members are located to face each other.

US 6,340,030 B1

APPARATUS FOR METERING A PLURALITY OF DIFFERENT LIQUID OR PASTY MATERIALS

Jan Gerritse, Brummen, Netherlands, assignor to Gerritse Beheer B.V., Netherlands

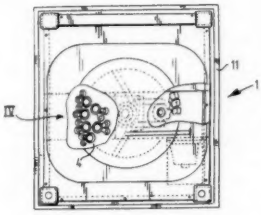
PCT No. PCT/NL98/00497, § 371 Date May 28, 1999, § 102(e) Date May 28, 1999, PCT Pub. No. WO99/11474, PCT Pub. Date Mar. 11, 1999

PCT Filed Sep. 1, 1998, Appl. No. 254,830

Claims priority, application Netherlands, Sep. 2, 1997, 1006911

Int. Cl. B65B *3/28*

U.S. Cl. 137—403 **18 Claims**



1. An apparatus for metering a plurality of different liquid or pasty masses to receiving containers, the apparatus comprising:

first supporting means for supporting the receiving containers for the masses in fixed positions;

a fixedly disposed annular frame bearing a plurality of dispensing nozzles controllable by a fixedly disposed central control means and each individually communicatable with the receiving containers;

second supporting means controllable by the control means for supporting one of the receiving containers such that this receiving container is displaceable in an annular path corresponding with the annular form of the frame and can be placed temporarily beneath a chosen dispensing nozzle for receiving mass dispensed by this dispensing nozzle;

a weighing device on which the receiving container can be placed, wherein the weighing device is configured to supply signals to the control means which are representative for the weight of the receiving container with its content or the change in that weight;

wherein the control means are adjustable for dispensing different masses in determined quantities to successive of the receiving containers in order to make successive mixtures of respective chosen compositions;

wherein the weighing device is disposed fixedly, and wherein the weighing device is connected to the control means via at least one cable means; and

wherein the second supporting means is rotatably drivable around a vertical axis by a cylindrical drive drum, around which an endless drive element is trained through a whole number of rotations, which drive element is drivable in both directions by a drive device.

US 6,340,031 B1

CHECK VALVE FOR REFUELING PIPE OF FUEL TANK

Hideki Matsumoto; Hiroshi Kitamura, and Masaaki Horiuchi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

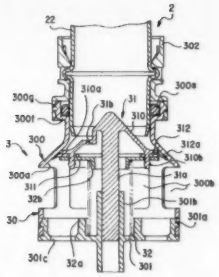
Filed Jun. 28, 1999, Appl. No. 340,195

Claims priority, application Japan, Jun. 30, 1998, 10-185055; Jun. 30, 1998, 10-185056; Jun. 30, 1998, 10-185057

Int. Cl. B06K *15/04;* **F16K** *21/02*

U.S. Cl. 137—513.3 **3 Claims**

1. A check valve for a refueling pipe of a fuel tank, which is provided at an end portion on a fuel tank side of the refueling pipe communication with the fuel tank and wherein said fuel tank and an end portion of said refueling pipe opposite to said fuel tank



contain corresponding pressures, and for preventing the backward flow of fuel from the fuel tank to the refueling pipe, said check valve comprising:

a valve element; and

a bypass hole formed in the valve element and penetrating the valve element to open directly to the refueling pipe interior to constantly communicate the interior of the fuel tank with the interior of the refueling pipe.

US 6,340,032 B1

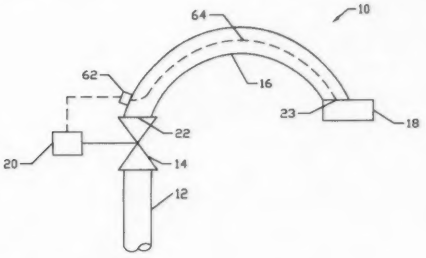
FAUCET AND SYSTEM FOR USE WITH A FAUCET

Peter Zosimadis, 41 Asterwind Crescent, Brampton, Ontario, Canada, L6R 1V8

Filed Aug. 14, 2000, Appl. No. 637,239

Int. Cl. F16K *31/02*

U.S. Cl. 137—552 **35 Claims**



1. A faucet comprising:

an electrically conductive fluid outlet conduit;

a transmitter for transmitting electrical signals, said transmitter connected electrically with said electrically conductive fluid outlet conduit;

at least one control valve for controlling the flow of fluid through said electrically conductive fluid outlet conduit; and

a valve controller for changing the position of said at least one control valve, said valve controller including an electrical signal receiver, said electrical signal receiver being connected electrically with said electrically conductive fluid outlet conduit, said valve controller being adapted for receiving said electrical signals, and wherein said electrical signals are communicated through said electrically conductive fluid outlet conduit.

US 6,340,033 B2

TRANSFER OF SHEAR-THINNING SLURRIES

Ronald Paradis, and Donald L. Puxley, both of Jonquière, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Mar. 15, 1999, Appl. No. 268,276

Int. Cl. B05C *5/00*

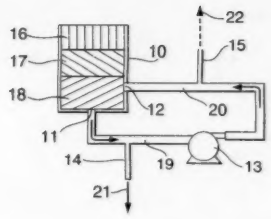
U.S. Cl. 137—563 **24 Claims**

1. A method of removing a slurry of mineral tailings having shear-thinning visco-plastic properties from a reservoir holding a body of said slurry, said slurry having a viscosity so high that direct withdrawal of a flow of said slurry from said reservoir is difficult, said method comprising:

thickening a fluid slurry in a reservoir to form said body of slurry having a viscosity so high that direct withdrawal of a flow of said slurry from said reservoir is difficult;

creating a submerged region of shear-thinned slurry of reduced viscosity in said body of slurry beneath the slurry of high viscosity for entraining adjacent slurry of said high viscosity by withdrawing slurry temporalily from said lower part of said reservoir via an outlet to form a flow of withdrawn slurry, subjecting said withdrawn slurry to shear to produce a flow of shear-thinned slurry of reduced viscosity of at least 50 Pa to said reservoir via an inlet spaced from said outlet, thereby creating a flow of slurry between the inlet and said outlet sufficient to entrain a portion of said slurry of high viscosity: and

removing from said reservoir a portion of said slurry of reduced viscosity containing entrained slurry of high viscosity.



US 6,340,034 B1

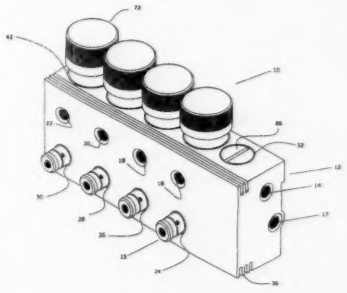
GAS REGULATOR WITH MULTIPLE REGULATED OUTLET PORTS

Glen M. Arnott, New Braunfels, and Trevor K. Markham, San Antonio, both of Tex., assignors to Daniel A. Holt, San Antonio, Tex.

Filed Feb. 9, 2000, Appl. No. 501,391

Int. Cl. F16K *21/00;49/00*

U.S. Cl. 137—883 **16 Claims**



1. A device for regulating gas pressure, the device comprising:

a regulator body, the regulator body having walls defining a single high pressure inlet port and walls defining at least two regulated ports, the body further comprising a high pressure manifold for providing gas to the regulated ports at the pressure it is received at from the high pressure port: and,

regulating means engageable with the regulated ports and the regulator body for independently regulating outlet pressure at the regulated ports.

US 6,340,035 B2

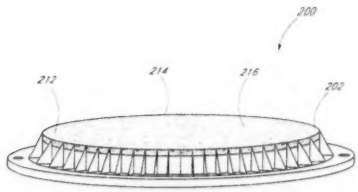
AGGREGATE RETAINING DEVICE FOR DRAIN COVERS

James R. Wright, 1783 C Cedar Glenn, Anaheim, Calif. 92807

Continuation-in-part of application No. 09/452,766, filed on Dec. 1, 1999, now Pat. No. 6,209,586. This application Mar. 5, 2001, Appl. No. 799,773.

Int. Cl. E04H *4/14*

U.S. Cl. 138—96 R **20 Claims**



1. A drain cover adapted to be positioned over a drain opening in a pool wherein the drain cover comprises an upper surface and a side surface wherein the side surface includes at least one opening permitting fluid communication therethrough to the drain opening, wherein a section of the upper surface is recessed so as to define a cavity region wherein the cavity region retains aggregate material so as to provide the upper surface of the drain cover with an aggregate finish.

US 6,340,036 B1

POWDERY-PARTICLES SUPPLYING METHOD AND APPARATUS, AND CONTROL METHOD FOR FLOWING SOLID-STATE SUBSTANCES

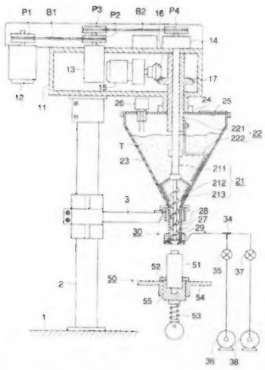
Yoshihiko Toyoizumi, and Chuji Iino, both of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Jun. 13, 2000, Appl. No. 592,711

Claims priority, application Japan, Jun. 16, 1999, 11-169727

Int. Cl. B65B *1/04*

U.S. Cl. 141—275 **25 Claims**



1. A particles-supplying apparatus, comprising:

a particles-supplying path connected to a supplying section of particles at one end of it, and having a delivery opening for discharging said particles at the other end of it; and

a passage controller for forming a cover consisting of at least a part of said particles by changing a density of at least a part of said particles existing in said particles-supplying path so as not to discharge said particles from said delivery opening.

US 6,340,037 B1

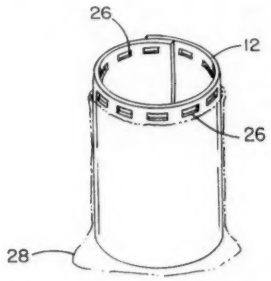
BAG SUPPORTING DEVICE

Timothy J. Stafford, 1216 W. 27th Ave., Kennewick, Wash. 99337

Filed Dec. 1, 2000, Appl. No. 727,411

Int. Cl. B65B *1/04*

U.S. Cl. 141—316 **11 Claims**



1. A bag supporting device positionable in a collapsible bag, said device comprising:

an elongate panel comprising a resiliently flexible material, said panel having a front surface, a back surface, an top edge, a bottom edge, and a pair of lateral side edges, a plurality of slots being formed through said panel adjacent only the top edge, said plurality of slots being elongate for receiving a hand of a user for gripping said panel, each of the slots of said plurality of slots having a common longitudinal axis extending through each of said slots, said common longitudinal axis extending in a longitudinal direction of said panel such that at least one of said plurality of slots is positionable in substantial registration with another one of said plurality of slots when said panel is coiled about an axis extending transversely with respect to a longitudinal extent of said panel.

US 6,340,038 B1

VERSATILE POURING SYSTEM INCLUDING A FUNNEL AND SPOUTS

Vicki Ingram, Emporia, Kans., assignor to Hopkins Manufacturing Corporation, Emporia, Kans.

Filed Apr. 18, 2001, Appl. No. 837,089

Int. Cl. B65B *39/00;* **B67C** *11/04*

U.S. Cl. 141—333 **9 Claims**

1. A pouring system for directing a flow of liquid, the pouring system comprising:

a funnel including

a semi-rectangular bowl having a semi-rectangular mouth and a smooth interior surface,

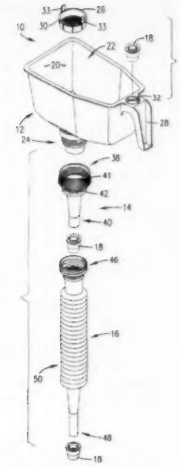
a threaded neck depending from the bowl,

a filter removably insertable into an upper portion of the threaded neck and having upstanding graspable tabs, and

a handle projecting from the bowl and having a cap-retaining recess;

a first sprout having a first length and operable to couple with the threaded neck;

a second spout having a second length and operable to couple with the first spout; and



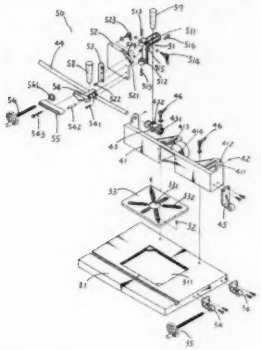
a cap operable to fit the first spout and the second spout and to be received within the cap-retaining recess.

US 6,340,039 B1

STRUCTURE OF A WOOD CARVING MACHINE

Wen-Chi Chang, PO Box 82-144, Taipei, Taiwan

Filed Jul. 20, 2000, Appl. No. 620,127
Int. Cl. B27B *31/00;* **B25H** *1/00*
U.S. Cl. 144—253.2 **1 Claim**



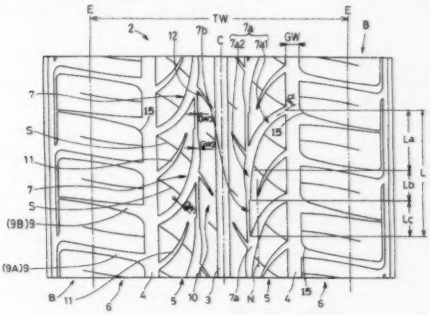
1. A worktable for a wood carving machine comprising a platform provided with two stationary brackets and an adjust screw rod threadedly engaged with said brackets, a positioning device provided with a movable bracket threadedly engaged with said adjust screw rod for enabling said positioning device to be moved to adjust position of a workpiece to be processed, said positioning device having a sleeve on which is mounted a clamping device for holding said workpiece and comprising a supporting arm, said supporting arm having a side from which extends a seat having an upper and a lower lugs between which is arranged a positioning plate by bolts, an adjust screw extending through said upper lug to keep said positioning plate in place, said supporting arm having another side provided with an eccentric roller below said seat, said positioning plate having a lug fitted between said upper and lower lugs of said supporting arm by bolts thus enabling said positioning plate to be rotated, wherein said sleeve of said positioning device is formed with a U-shaped recess on which is mounted said supporting arm by a handle, and said supporting arm of said clamping device has a roller slidably mounted on an upper edge of said positioning device.

US 6,340,040 B1

VEHICLE TIRE INCLUDING MAIN GROOVES AND LUG GROOVES

Akio Ikeda, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Oct. 29, 1999, Appl. No. 429,077
Claims priority, application Japan, Oct. 30, 1998, 10-310747; Oct. 30, 1998, 10-310748
Int. Cl. B60C *11/03;11/12;11/13;103/04*
U.S. Cl. 152—209.18 **11 Claims**



1. A vehicle tire comprising a tread portion,

the tread portion provided with circumferentially extending straight main grooves including a central main groove on the tire equator and an axially outer main groove on each side thereof, and

first lug grooves extending from the axially outer main grooves towards the central main groove and terminating prior to said central main groove,

each of the first lug grooves comprising a first curved portion, a second curved portion and a straight portion arranged in this order from the outer main groove towards the central main groove, wherein

a width of the first curved portion is in the range of from 60 to 80% of the width of the outer main groove,

a width of the second curved portion is not less than 25% but less than 60% of the width of the outer main groove, and

a width of the straight portion is not more than 25% of the width of the outer main groove,

an inclination angle of each said first lug groove with respect to the tire circumferential direction being in the range of from 30 to 50 degrees at the outer main groove, and

gradually decreasing therefrom in the first and second curved portions, and

being substantially zero in the straight portion,

a depth of each said first lug groove being smaller in the straight portion than the first curved portion,

the circumferential length of the first curved portion is 0.5 to 0.6 times the circumferential length of the first lug groove, and

the circumferential length of the second curved portion is 0.1 to 0.2 times the circumferential length of the first lug groove, and

the circumferential length of the straight portion is 0.2 to 0.3 times the circumferential length of the first lug groove.

US 6,340,041 B1

PNEUMATIC TIRE INCLUDING TWO WIDE CIRCUMFERENTIAL GROOVES

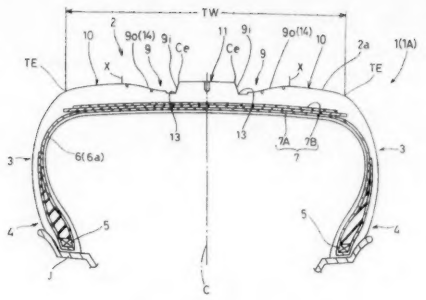
Hideaki Sugihara, Amagasaki, and Koji Ohkita, Toyota, both of Japan, assignors to Sumitomo Rubber Industries, Hyogo-ken, Japan

Filed Dec. 9, 1999, Appl. No. 457,665
Int. Cl. B60C *11/13;101/00;115/00*
U.S. Cl. 152—209.5 **10 Claims**

1. A pneumatic tire comprising

a tread portion,

two wide circumferential grooves dividing the tread portion into a pair of shoulder parts and a central part therebetween,



each of the circumferential grooves having a groove bottom having an axially inner edge, an axially inner sidewall and an axially outer side wall,

in a meridian section of the tire, said axially inner sidewall extending substantially straight from said axially inner edge to a ground contacting top surface of the central part and inclined axially inwards, and said axially outer sidewall comprising a convex part extending axially outwardly to a merge point at which the convex part merges into a ground contacting top surface of one of the shoulder parts,

in a foot print of the tire, each of the circumferential grooves having a maximum axial width of not less than 35 mm,

a radius of curvature of said convex part being 10 to 40% of a tread width of the tread portion on the footprint, and

under a normally inflated unloaded state of the tire, the axial width of the convex part being 0.4 to 0.7 times the width of the circumferential groove.

US 6,340,042 B1

METHOD OF AND APPARATUS FOR APPLYING LIGHT-SHIELD MEMBER TO PHOTOSENSITIVE MEMBER

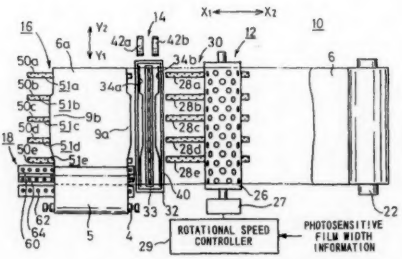
Bungo Shigeta; Akihisa Inoue, and Akinori Takase, all of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Division of application No. 09/211,048, filed on Dec. 15, 1998, now Pat. No. 6,159,326. This application Aug. 29, 2000, Appl. No. 650,847.

Claims priority, application Japan, Dec. 17, 1997, 9-348029

Int. Cl. B65H *35/04*; **B29C** *65/00*; **B32B** *31/00*

U.S. Cl. 156—361 **12 Claims**



1. An apparatus for applying a light-shield member to an outer circumferential surface of a rolled photosensitive member, comprising:

a first feeding mechanism for feeding an elongate light-shield member in a direction transverse to a longitudinal direction of a rolled photosensitive member;

a first cutting mechanism for cutting off a leading end portion of said elongate light-shield member into a light-shield member having a predetermined shape corresponding to the width of said rolled photosensitive member;

a second feeding mechanism for feeding said light-shield member to an overlapping position and causing a transverse end of said light-shield member to overlap a longitudinal end of said rolled photosensitive member;

a joining mechanism for joining said light-shield member endwise to said rolled photosensitive member; and

an applying mechanism for winding said light-shield member around said rolled photosensitive member thereby to apply said light-shield member to an outer circumferential surface of said rolled photosensitive member.

US 6,340,043 B1

DEVICE FOR SEALING A SYSTEM FOR CONDITIONING PRODUCTS ON A PALETTE

Michel Paupardin, Route de Quelen, 62360 Isques, France

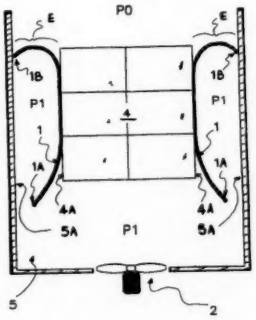
PCT No. PCT/FR98/01690, § 371 Date Feb. 28, 2000, § 102(e) Date Feb. 28, 2000, PCT Pub. No. WO99/11141, PCT Pub. Date Mar. 11, 1999

PCT Filed Jul. 30, 1998, Appl. No. 486,386

Claims priority, application France, Aug. 28, 1997, 97/10874

Int. Cl. B32B *31/00*

U.S. Cl. 156—382 **3 Claims**



1. Sealing device for a temperature adjustment system of products situated on a pallet placed in a ventilation circulation tunnel, characterised in that, sealing in the tunnel (**5**) is effected with a sheet (**1**) disposed so as to be glued on the sides and top of the products under the effect of the ventilation air circulating in said tunnel and wherein the sheet is operable to block leakage of ventilation air around the products situated on the pallet.

US 6,340,044 B1

METHOD AND APPARATUS FOR THE MANUFACTURE OF BEVELED EDGE MOLDING

Dennis M. Beierman, Belton, and John K. Hubbard, Moody, both of Tex., assignors to Premark RWP Holdings, Inc., Wilmington, Del.

Filed May 24, 1999, Appl. No. 317,203

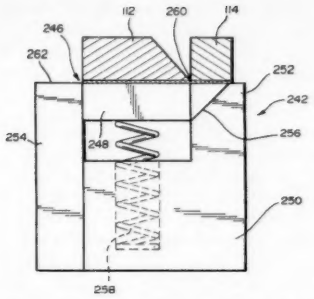
Int. Cl. E04C *2/00*; **A47F** *9/00*

U.S. Cl. 156—443 **32 Claims**

1. A system for the fabrication of molding from stock material, comprising:

a groove cutting assembly for cutting a groove of predetermined shape and size in stock material to define a facing member and bevel member, wherein the groove is positioned between the facing member and the bevel member to define respectively opposed surfaces on the facing member and the bevel member;

an adhesive application station for applying adhesive within the groove formed by the groove cutting assembly;



a folding station for bringing the opposed surfaces of the facing member and the bevel member together;

means for conveying the stock material through the system; and

wherein the stock material includes distinct facing members and bevel members, and the system further includes a squaring assembly for squaring the facing members and the bevel members fed into the system before the stock material is cut by the groove cutting assembly.

US 6,340,045 B2

APPARATUS FOR LAMINATING LAMINATED GLAZING ASSEMBLIES

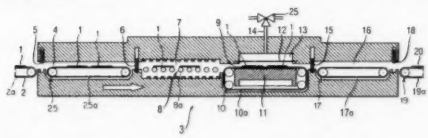
Michael Balduin, Alsdorf; Hubert Havenith, Würselen, and Michael Labrot, Aachen, all of Germany, assignors to Saint-Gobain Glass France, Courbevoie, France

Division of application No. 09/492,455, filed on Jan. 27, 2000. This application Feb. 23, 2001, Appl. No. 790,494.

Claims priority, application Germany, Jan. 27, 1999, 199 03 171

Int. Cl. C03C *27/12*

U.S. Cl. 156—499 **14 Claims**



1. An apparatus for laminating a pre-form, wherein the pre-form includes at least first and second solid panes superposed with respect to each other and having a layer of adhesive in between so that the pre-form is subjected to both pressure differences and heat differences, to form a laminated glazing assembly, said apparatus comprising:

an inlet lock for lowering an ambient pressure of the pre-form by subjecting the pre-form to a first vacuum created in said inlet lock after the pre-form has been introduced into said inlet lock;

a heating chamber adjacent said inlet lock, said heating chamber being permanently under a second vacuum of a magnitude equivalent to the first vacuum created in said inlet lock, and said heating chamber heating the pre-form from an assembly temperature to a melting point temperature of the layer of adhesive of the pre-form after the pre-form is conveyed into said heating chamber from said inlet lock;

a pressing chamber adjacent said heating chamber, said pressing chamber being permanently under said second vacuum of a magnitude equivalent to said first vacuum created in said inlet lock, said pressing chamber including pressing pieces for applying a sufficient pressure to main surfaces of the pre-form to adhesively bond the at least first solid pane to the layer of adhesive so that after the pre-form leaves said pressing chamber, the laminated glazing assembly is formed;

an outlet lock located adjacent to said pressing chamber, said outlet lock for venting the laminated glazing assembly to atmospheric pressure, after the laminated glazing assembly has been pressed in said pressing chamber and transferred into said outlet lock;

a plurality of shutters located within said apparatus, wherein said plurality of shutters separate said inlet lock and said outlet lock from said heating chamber and said pressing chamber, respectively; and

conveying devices located within said apparatus, wherein said conveying devices convey the pre-form through said inlet lock, said heating chamber, said pressing chamber, and said inlet lock.

US 6,340,046 B1

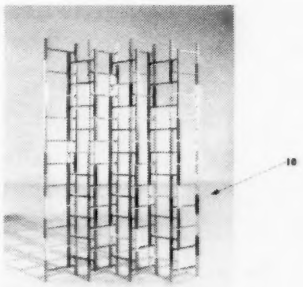
COMPACT FOLDING SCREEN ASSEMBLY

Stuart Basseches, 97 Fifth Ave. 4A, New York, N.Y. 10003

Filed Jan. 23, 2001, Appl. No. 766,992

Int. Cl. A47G *5/00*

U.S. Cl. 160—135 **7 Claims**



1. A compact folding screen assembly comprising a first panel and a second panel hingedly connected to said first panel, each said panel comprising a plurality of interconnected generally H-shaped beam members, said beam members comprising a horizontally disposed central web having a left flange and a right flange extending perpendicularly from the left and right ends respectively of said web, connection means interposed between the said left flanges of said beams of said first panel for connecting said left flanges in spaced coplanar alignment and defining spaces between said right flanges, said second panel comprising a plurality of said beam members, the webs of said beam members of said second panel being shiftable through respective said spaces, and pivot means interposed between said left flanges of said beams of said second panel and opposed portions of said webs of said beams of said first panel.

US 6,340,047 B1

CORE TIED CAST AIRFOIL

David A. Frey, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

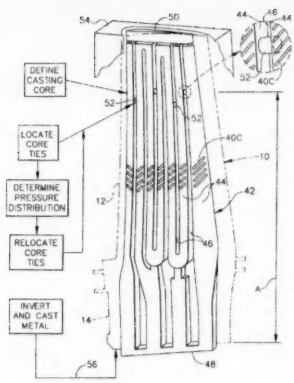
Filed Mar. 22, 1999, Appl. No. 274,167

Int. Cl. B22D *33/04;27/04*

U.S. Cl. 164—137 **20 Claims**

1. A method of casting a gas turbine engine airfoil around a casting core having a plurality of legs to form matching flow channels in said airfoil separated by ribs for channeling cooling air, comprising:

locating a core tie between two of said core legs to maintain alignment therebetween, with said tie defining a corresponding tie hole in an intermediate one of said ribs;



determining internal static pressure distribution of said cooling air across said intermediate rib;

relocating said core tie along a span of said core to reduce differential static pressure of said cooling air across said tie hole formed by said core tie;

forming said core with said relocated core tie; and

casting said airfoil using said core.

US 6,340,048 B1

MOLD FOR USE IN CONTINUOUS METAL CASTING

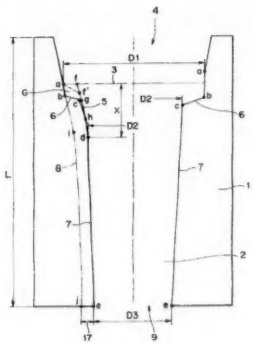
Kiyoshi Tsune, Kobe, and Fumiki Asano, Osaka, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho., Kobe, Japan

Filed Jul. 27, 1999, Appl. No. 361,125

Claims priority, application Japan, Jul. 31, 1998, 10-217576

Int. Cl. B22D *11/00*

U.S. Cl. 164—418 **17 Claims**



1. A mold for continuous metal casting comprising:

a cavity defined by a vertical axis and a wall having a vertical cross section of an inner surface symmetrical to the axis and open at a top end and a bottom end, the vertical cross section of the inner surface of the wall having at least a first and a second tapered portions, the first tapered portion located above the second tapered portion, being steeper than the second tapered portion,

wherein a molten metal is cast at a meniscus position situated within the first tapered portion, and the amount of solidification shrinkage caused by phase change from liquid phase to solid phase of the cast metal is absorbed by a restriction portion situated between a molded product and a section of the inner surface of the wall, and

the section of the inner surface of the wall situated within the second tapered portion and below the meniscus position by at least a vibration amplitude of the mold.

16. A mold for continuous metal casting comprising:

a cavity defined by a vertical axis and a wall having a vertical cross section of an inner surface symmetrical to the axis and open at a top end and a bottom end, the vertical cross section of the inner surface of the wall having at least a first and a second tapered portions, the first tapered portion located above the second tapered portion, being steeper than the second tapered portion,

wherein a molten metal is cast at a meniscus position situated within the first tapered portion, and the amount of solidification shrinkage caused by phase change from liquid phase to solid phase of the cast metal is absorbed by a restriction portion situated between a molded product and a section of the inner surface of the wall, and

the section of the inner surface of the wall situated within the second tapered portion and below the meniscus position by at least a vibration amplitude of the mold so as to form a solidified shell reliably formed and kept in contact with the inner surface of the mold thereby that no air gap is formed between the mold and a molded product outside of the restriction portion due to the shrinkage or a vibration of the mold.

US 6,340,049 B1

DEVICE FOR CASTING OF METAL

Anders Lehman, Bromma; Erik Svensson, Västerås; Tord Kroon, Västerås, and Jan-Erik Eriksson, Västerås, all of Sweden, assignors to ABB AB, Västerås, Sweden

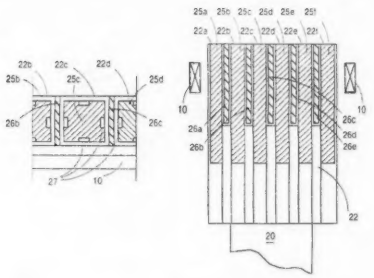
PCT No. PCT/SE99/00313, § 371 Date Sep. 1, 2000, § 102(e) Date Sep. 1, 2000, PCT Pub. No. WO99/44769, PCT Pub. Date Sep. 10, 1999

PCT Filed Mar. 3, 1999, Appl. No. 623,379

Claims priority, application Sweden, Mar. 6, 1998, 9800736

Int. Cl. B22D *27/02;11/124;11/00*

U.S. Cl. 164—471 **22 Claims**



1. A device for continuous or semi-continuous casting of metal comprising:

a cooled mold and an induction coil located at a top end of said mold,

a plurality of partitions at said top end of said mold which are oriented essentially in a casting direction and arranged to divide said mold into segments which are also oriented essentially in the casting direction, each partition comprising an electrically insulating barrier, the top ends of said mold segments being hollow, and

supporting bars or beams as cores located in the hollow mold segments for mechanical support, said cores having superior mechanical properties relative to said mold.

US 6,340,050 B1

INTERNALLY GROOVED HEAT EXCHANGER PIPE AND METAL BAR WORKING ROLL FOR INTERNALLY GROOVED HEAT EXCHANGER PIPES

Yasutoshi Mori; Kouzi Yamamoto; Kenzi Nakamizo, and Toshiaki Hashizume, all of Tokyo, Japan, assignors to The Furakawa Electric Co., Ltd., Tokyo, Japan

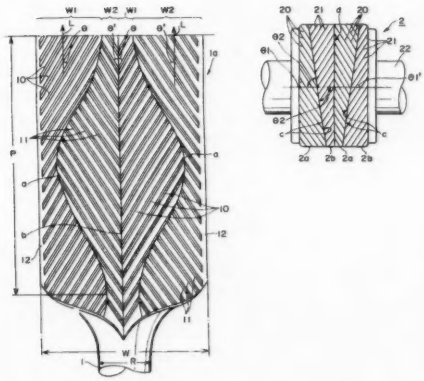
PCT No. PCT/JP99/05844, § 371 Date Sep. 8, 2000, § 102(e) Date Sep. 8, 2000, PCT Pub. No. WO00/31486, PCT Pub. Date Jun. 2, 2000

PCT Filed Nov. 22, 1999, Appl. No. 582,235

Claims priority, application Japan, Nov. 24, 1998, 10-332666

Int. Cl. F28F *1/40;* B21B *27/02;* B21H *8/02*

U.S. Cl. 165—133 11 Claims



1. An internally-grooved heat exchanger tube, characterized in that:

the internal surface of a metal tube (**1**) is divided into a plurality of continuous areas (**W1**, **W2**) parallel to the axial direction (L) of the tube;

a large number of fine parallel fins (**10**,**11**) are respectively formed in the adjacent areas (**W1**, **W2**);

the fins (**10**) in one area (**W1**) out of the adjacent areas and the fins (**11**) in the other area (**W2**) are different in at least one selected among lead angle (θ,θ') to the axial direction (L) of the tube, fin vertical angle (α,α') and fin pitch (p, p'); and

a boundary line (a) between at least one area (**W1**) and the other area (**W2**) adjacent to said area (**W1**) is formed in a state of meandering to the axial direction (L) of said metal tube (**1**).

10. A metal strip machining roll for an internally-grooved heat exchanger tube, comprising:

a roll of a predetermined length formed by combining a plurality of roll pieces (**2***a*, **2***b*) together in layers parallel to the axial direction;

wherein a large number of fine parallel grooves (**20**, **21**) are respectively formed on the outer surfaces of the adjacent roll pieces (**2***a*, **2***b*);

the grooves (**20**) on one roll piece **2***a* out of the adjacent roll pieces and the grooves (**21**) on the other roll piece (**2***b*) are different in at least one selected among lead angle (θ1, θ1') to the axial direction, bottom angle (α1, α1') and groove pitch (p1, p1'); and

a contact surface (c) of at least one roll piece (**2***a*) with the other roll piece (**2***b*) adjacent to said roll piece (**2***a*) forms a surface inclined at a predetermined inclination angle to a surface perpendicular to the axial direction of each of said roll pieces (**2***a*, **2***b*).

US 6,340,051 B1

HEAT EXCHANGER WITH BAFFLE PLATES

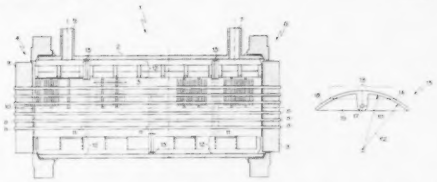
Walter Bloksma, Almere, Netherlands, assignor to Bloksma B.V., Almere, Netherlands

Filed Jul. 18, 2000, Appl. No. 618,993

Claims priority, application Netherlands, Jul. 19, 1999, 1012637

Int. Cl. F28F *9/007;9/013;9/22*

U.S. Cl. 165—159 25 Claims



1. A heat exchanger comprising a housing having an inner wall, an inlet and an outlet for passing a first heat exchange medium through the housing, said housing having a core comprising a series of plate-shaped fins placed at least almost parallel to each other, in which each fin is provided with pipe openings, and a bundle of pipes for passing a second heat exchange medium, and a number of baffle plates, in which each baffle plate is provided with pipe openings, in which each of the pipes extends through respective pipe openings of respective fins and respective baffle plates, characterized by filling blocks being provided, each having a bent base portion which has an outer surface, the bend of the base portion being such that the filling block closely abuts the inner wall of the housing, with a rib projecting from the base portion to the center of the housing when placed in the housing, which rib has a central slot, in which slot a respective baffle plate is accommodated.

US 6,340,052 B1

HEAT EXCHANGER

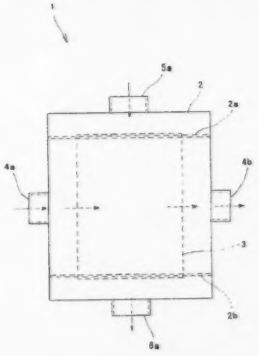
Haruo Uehara, 1544-119, Ooaza-Kinryu, Kinryu-Machi, Saga-Shi, Saga-Ken, Japan

Filed Apr. 14, 2000, Appl. No. 550,291

Claims priority, application Japan, Apr. 28, 1999, 11-122778

Int. Cl. F28F *3/00*

U.S. Cl. 165—166 6 Claims



1. A heat exchanger for making a heat exchange between a high temperature fluid and a low temperature fluid, said heat exchanger comprising:

a shell having a box-shape, an inside of which is divided into at least three zones disposed in a prescribed direction by at least two parallel partition walls; and a plurality of tubular heat transferring members, said heat transferring members comprising a plurality of tubular bodies each having opposite

open ends and two surfaces being opposite and in parallel to each other at a prescribed distance, said tubular bodies being disposed in parallel with each other in an intermediate zone, so that a central axis of each of said tubular bodies coincide with a prescribed direction and said surfaces of said tubular bodies are opposite in parallel and in parallel to each other, said tubular bodies passing through said at least two parallel partition walls so that the opposite open end of each said tubular bodies are located in said adjacent zones to said intermediate zone, respectively, and an inside of each of said tubular bodies being isolated from said intermediate zone; heat exchange being made through said tubular heat transferring members serving as heat transferring faces by supplying any one of the high temperature fluid and the low temperature fluid to any one of said adjacent zones to said intermediate zone of said shell under a prescribed pressure, to cause said any one of the high temperature fluid and the low temperature fluid to pass through said tubular heat transferring members, and discharging said any one of the high temperature fluid and the low temperature fluid from the other of said adjacent zones to said intermediate zone, while supplying the other of the high temperature fluid and the low temperature fluid to said intermediate zone from a side surface of said shell to cause it to flow between said tubular heat transferring members in a direction perpendicular to an axial direction of said tubular heat transferring members.

US 6,340,053 B1

SELF-ENCLOSING HEAT EXCHANGER WITH CRIMPED TURBULIZER

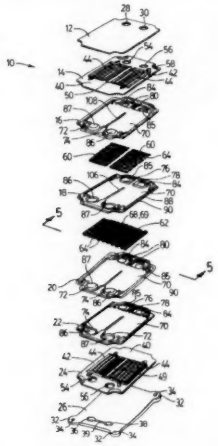
Alan K. Wu, Kitchener; Bruce L. Evans, Burlington, and Brian Duke, Carlisle, all of Canada, assignors to Long Manufacturing Ltd., Oakville, Canada

Filed Feb. 4, 2000, Appl. No. 497,664

Claims priority, application Canada, Feb. 5, 1999, 2260890

Int. Cl. F28F *3/08;* **F28D** *7/10*

U.S. Cl. 165—167 **5 Claims**



1. A plate type heat exchanger comprising:

first and second plates, each plate including a planar central portion, a first pair of spaced-apart bosses extending from one side of the planar central portion, and a second pair of spaced-apart bosses extending from the opposite side of the planar central portion, said bosses each having an inner peripheral edge portion, and an outer peripheral edge portion defining a fluid port; a continuous ridge encircling the inner peripheral edge portions of at least the first pair of bosses and extending from the planar central portion in the same direction and equidistantly with the outer peripheral edge portions of the second pair of bosses;

each plate including a raised peripheral flange extending from the planar central portion in the same direction and equidistantly with the outer peripheral edge portions of the first pair of bosses;

the first and second plates being juxtaposed so that one of: the continuous ridges are engaged or the plate peripheral flanges are engaged; thereby defining

a first fluid chamber between the engaged ridges or peripheral flanges, with the fluid ports in one of said pairs of spaced-apart bosses forming an inlet and an outlet to said first flow chamber, and said chamber defining a flow path between said inlet and outlet; the fluid ports in the respective first and second pairs of spaced-apart bosses being in registration; and

an expanded metal turbulizer located between the planar central portion of the first plate and the planar central portion of the second plate, the turbulizer including a crimped portion, whereat the expanded metal turbulizer is closed, said crimped portion being located in said flow path to reduce short-circuit flow between said inlet and outlet.

US 6,340,054 B1

PLATE HEAT EXCHANGER

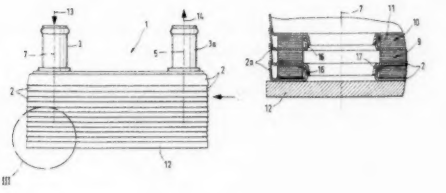
Gebhard Schwarz, Stuttgart; Hans-Dieter Schwarz, Bretzfeld, and Martin Wührl, Tamm, all of Germany, assignors to Behr GmbH & Co., Stuttgart, Germany

Filed Aug. 21, 2000, Appl. No. 642,472

Claims priority, application Germany, Aug. 19, 1999, 199 39 264

Int. Cl. F28F *3/08;9/02;* **F28D** *1/02*

U.S. Cl. 165—167 **16 Claims**



1. Plate heat exchanger comprising:

several identical plates formed as dishes which are stacked on one another, each turned by 180°, with edges of said plates adjacent to one another,

projecting conduits provided on the plates for formation of feeding and drainage channels for heat exchange media, said conduits being adjacent to an associated surface of a neighboring plate,

wherein at least one conduit for each plate is formed by a collar which projects and conically expands away from one side surface of a base of the plate and another conduit is formed by a collar which projects and conically tapers away from an opposite side surface of the base of the plate,

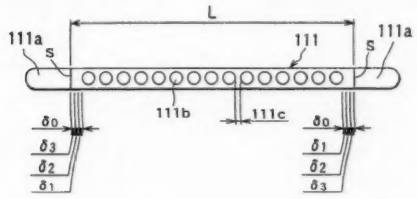
wherein the collars are disposed on the base of the plate so that they are aligned to one another after a 180° turn about a central axis of the plate, and

wherein conicity of the collars is coordinated to one another so that they engage in one another at least partially.

US 6,340,055 B1
HEAT EXCHANGER HAVING MULTI-HOLE STRUCTURED TUBE

Yoshiyuki Yamauchi, Chita-gun; Ken Yamamoto, Obu; Osamu Kobayashi; Minoru Ohta, both of Chiryu, and Toshiya Nagasawa, Obu, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed May 25, 2000, Appl. No. 578,930
Claims priority, application Japan, May 25, 1999, 11-145323
Int. Cl. F28F *9/02*
U.S. Cl. 165—174 **20 Claims**



1. A heat exchanger comprising:

a flat tube having an end portion in a longitudinal direction thereof, the end portion having an end portion width smaller than a tube width which is a width of the tube at a portion other than the end portion, the end portion width and the tube width being perpendicular to the longitudinal direction and parallel to a cross-sectional long side direction of the tube, the tube defining therein a plurality of passage holes in which a first fluid flows, the plurality of passage holes being arranged in the cross-sectional long side direction within the end portion width to open at the end portion;

a fin joined to the tube to facilitate heat exchange between the first fluid flowing inside the tube and a second fluid flowing outside the tube; and

a tank connected to the end portion of the tube to communicate with the plurality of passage holes, wherein:

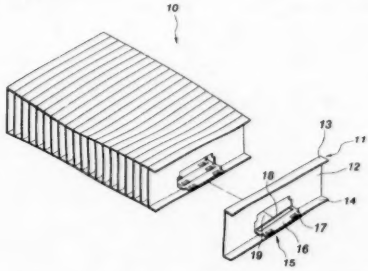
the end portion is formed by a cut surface which extends in the longitudinal direction and determines the end portion width;

the plurality of passage holes include a hole disposed most adjacently to the cut surface and defining a specific distance δ_0 from the cut surface to be prevented from being crushed when the cut surface is formed.

US 6,340,056 B1
FLOW CHANNEL TYPE HEAT DISSIPATING FIN SET

Meng-Cheng Huang, Taipei Hsien, and Tony Wang, Sanchung, both of Taiwan, assignors to Chaun-Choung Technology Corp., Taipei Hsien, Taiwan

Filed Apr. 24, 2001, Appl. No. 840,159
Int. Cl. F28F *7/00*
U.S. Cl. 165—185 **3 Claims**



1. A flow channel type heat dissipating fin set formed by a plurality of metal pieces, each metal piece comprising:

a body; and

a connecting piece installed on the body having one or more connecting pieces punched from the body; the connecting piece being protruded from one side of the body; a via hole being formed on the body; and

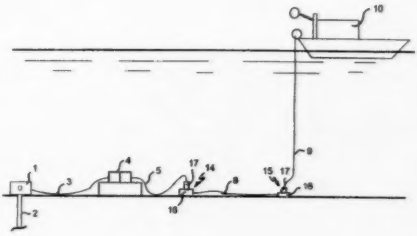
buckles and buckling holes being formed on the body;

wherein the metal pieces are combined by buckling the buckles and buckling holes so that the metal pieces are continuously buckled and stacked as a heat dissipating fin set; and via holes on the bodies of the metal pieces are formed as longitudinal flow channels.

US 6,340,057 B1
CONNECTION DEVICE

Sergio Augusto Ferreira Dantas, Rio de Janeiro, Brazil, assignor to FMC do Brasil Industria E. Comercio S.A., Rio de Janeiro, Brazil

PCT No. PCT/BR98/00023, § 371 Date Mar. 10, 2000, § 102(e) Date Mar. 10, 2000, PCT Pub. No. WO98/51903, PCT Pub. Date Nov. 19, 1998
PCT Filed May 13, 1998, Appl. No. 463,910
Claims priority, application Brazil, May 14, 1997, 9703159
Int. Cl. F16L *1/04*
U.S. Cl. 166—337 **13 Claims**



1. A connection device for connecting tubes, comprising a base (**16**) with a structure; a hub fixed on the base (**16**) and adapted to receive an end of an external tube (**5**,**9**); a hoisting/launching device (**22**) and a tube (**20**) fixed to the structure, the tube (**20**) having a first end connected to the hub and a second end being free and adapted to receive an end of another external tube (**8**), characterized in that the second end (**21**) of the tube (**20**) is rotatable and longitudinally displaceable and the hoisting/launching device (**22**) is placed above the center of the cross section of said second end (**21**).

US 6,340,058 B1
HEAT TRIGGERING FIRE SUPPRESSANT DEVICE

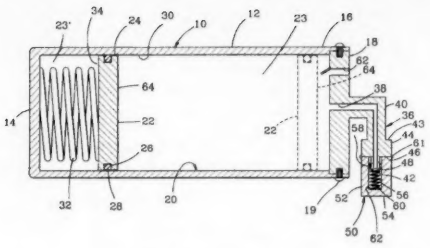
Stephen M. Dominick, 2118 Fox Run Dr., Lynn Haven, Fla. 32444, and Robert M. Campisi, 1513 S. Kimbrel Ave., Panama City, Fla. 32404

Filed May 30, 2000, Appl. No. 583,019
Int. Cl. A62C *35/02*
U.S. Cl. 169—26 **6 Claims**

1. A fire suppressing device automatically operable by exposure to fire temperatures of at least a predetermined degree, said device comprising:

(a.) a canister housing of uniform cross section for containing a fire suppressing fluid under pressure, where said housing includes an axially slidable piston member having front and rear faces, and comparably shaped to said cross section, means for fluid sealing said piston member between said front and rear faces, energy storing means within said housing in contact with said piston member to effect its sliding movement; and,

(b.) a canister end cap member closing said housing to define a cavity therewithin, where said end cap member includes an



opening in communication with a nozzle mechanism, said nozzle mechanism comprising

(i.) a conduit leading from said opening to a nozzle end, said nozzle end consisting of a cylindrical body portion of a first diameter, a smaller concentric portion having a nozzle face, and an annular shoulder separating said portions,

(ii.) a cylindrical end cap, closed at one end and containing a central recess of a size to slidable engage said concentric portion, and,

(iii.) a compression spring within said central recess to act against said nozzle face, where said cylindrical end cap, with said compression spring disposed therewithin, is secured to said cylindrical body portion by a solder which melts or softens at the at least said predetermined degree.

US 6,340,059 B1
THREADLESS SPRINKLER HEAD ASSEMBLY
Warren C. Bethea, 2711 Willena Ave., Montgomery, Ala. 36107
Filed May 9, 2000, Appl. No. 567,682
Int. Cl. A62C *37/08*
U.S. Cl. 169—37 **15 Claims**

1. A sprinkler head mounting assembly for attaching a sprinkler head to a pipe, the pipe having a longitudinal axis and a peripheral surface with at least one opening in the peripheral surface such that fluid may flow through the pipe and be distributed through the opening and expelled through said sprinkler head, said sprinkler head mounting assembly comprising:

a sprinkler head stem connected to said sprinkler head, said stem of appropriate size to fit into the opening in the peripheral surface of the pipe substantially perpendicular to the longitudinal axis of the pipe, said stem being sufficient to deliver fluid from the pipe to said sprinkler head;

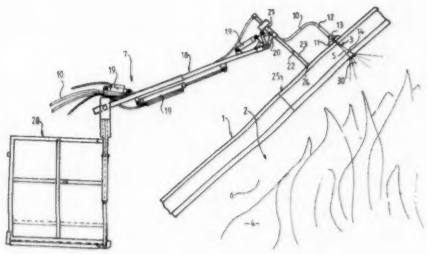
a flange connected to said sprinkler head stem;

a first clamp portion having a first end and a second end, said first clamp portion being substantially curved to approximate the curvature of the pipe so that said first clamp portion will fit around a section of the peripheral surface of the pipe, said first and second ends of said first clamp portion being hooked;

an opening within said first clamp portion whereby said flange is held by said first clamp portion such that said first clamp portion may be used to affix said sprinkler head to the opening of the pipe; and

a second clamp portion having a first end and a second end, said second clamp portion being designed to fit around the section of the peripheral surface of the pipe that is not covered by said first clamp portion, said first and second ends of said second clamp portion being hooked in an opposite manner from said first and second ends of said first clamp portion such that the ends of said first and second clamp portions will join together forming a substantially secure connection.

US 6,340,060 B1
METHOD AND EQUIPMENT FOR USE IN RESCUE SERVICE
Lars G. Larsson, Särö, and Arne Larsson, Göteborg, both of Sweden, assignors to Cold Cut Systems Svenska A.B., Kungsbacka, Sweden
PCT No. PCT/SE98/01227, § 371 Date Feb. 22, 2000, § 102(e) Date Feb. 22, 2000, PCT Pub. No. WO99/08753, PCT Pub. Date Feb. 25, 1999
PCT Filed Jun. 24, 1998, Appl. No. 485,122
Claims priority, application Sweden, Aug. 15, 1997, 9702964
Int. Cl. A62C *2/00*
U.S. Cl. 169—43 **18 Claims**



5. Equipment for rescue service operations for making at least one hole in structures having a space in which there is a fire for combustion-gas venting and fire extinction, comprising:

a source of pressurized liquid;

a conduit connected to the source of pressurized liquid; and

a nozzle having an inlet and outlet, the conduit being connected at one of its ends to an outlet of the source of pressurized liquid and at an opposite end to the inlet of the nozzle for supply of liquid from the source pressurized liquid to the outlet of the nozzle, the source of pressurized liquid, the conduit, and the nozzle cooperating to cause liquid to exit the outlet of the nozzle as a jet adapted to cut at least one hole in the structure to the space and also to be sprayed into the space in such a manner as to assist in extinguishing the fire in the space,

wherein the nozzle is disposed at an outer free end of an arm which is movable in all directions, and wherein the equipment includes an actuator permitting movement of the arm in all directions and a bracket connected to the arm at the outer free end thereof so as to support a power-operated rotator on which a holder is mounted for rotation about a center axis, the holder including, at an end remote from the rotator, a support arranged to abut against the structure, the nozzle being connected to the holder and being positioned in parallel with the center axis in spaced relationship thereto such that the nozzle, upon rotation of the holder, is caused to orbit the center axis and in doing so cut an essentially circular hole in the structure.

US 6,340,061 B2

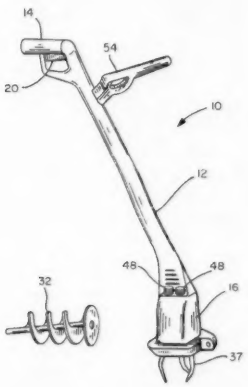
LAWN AND GARDEN TOOL

James W. Marshall, Towson; James A. Martin, and Wendell B. Leimbach, both of Baltimore, all of Md., assignors to AME Group, Incorporated, Towson, Md.

Continuation of application No. 09/352,289, filed on Jul. 13, 1999, now Pat. No. 6,189,627. This application Dec. 18, 2000, Appl. No. 739,553.

Int. Cl. A01B *33/00*

U.S. Cl. 172—41 **17 Claims**



1. In a lawn and garden tool, wherein a motor drives a soil-working implement through planetary gearing for a very high-torque low-speed operation, the improvement which comprises a housing disposed above the ground and including a gear case, a motor mounted directly above the gear case and having a motor shaft rotating about a substantially vertical axis and protruding within the gear case, a plurality of planetary gears in the gear case, arranged in cascade, and driven by the motor shaft, the plurality of planetary gears having an output shaft driving an adapter plate disposed below the housing, and at least one tool implement carried by the adapter plate and rotating about an axis which is substantially parallel to the axis of the motor shaft.

US 6,340,062 B1

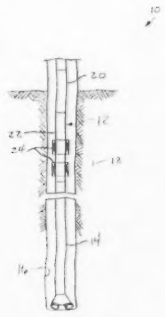
EARLY FORMATION EVALUATION TOOL

Neal G. Skinner, Lewisville, Tex., assignor to Halliburton Energy Services, Inc., Dallas, Tex.

Filed Jan. 24, 2000, Appl. No. 490,334

Int. Cl. E21B *49/00*

U.S. Cl. 175—58 **13 Claims**



1. A method of sampling fluid from at least one formation intersected by a wellbore, the method comprising the steps of:

interconnecting a tool in a tubular string;

positioning the tool in the wellbore;

altering fluid pressure in the tubular string; and

receiving successive formation fluid samples in respective successive fluid samplers of the tool in response to the fluid pressure altering step.

US 6,340,063 B1

STEERABLE ROTARY DIRECTIONAL DRILLING METHOD

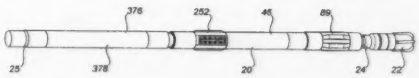
Laurier E. Comeau, Leduc; Elis Vandenberg; Edward James Cargill, both of Sherwood Park, all of Canada; John Ransford Hardin, Jr., Houston, Tex.; Terrance Dean Maxwell, Leduc; Bryan James Restau, Beaumont, both of Canada; Frank Seadio Ramirez, Humble, Tex.; Colin Walker, Conchez-de-Bearn, France, and Rick Hay, Nisku, Canada, assignors to Halliburton Energy Services, Inc., Houston, Tex.

Division of application No. 09/353,599, filed on Jul. 14, 1999, now Pat. No. 6,244,361. This application Dec. 19, 2000, Appl. No. 739,285.

Claims priority, application Canada, Jul. 12, 1999, 2277714

Int. Cl. E21B *7/06*

U.S. Cl. 175—61 **26 Claims**



1. A method for orienting a rotary drilling system, the rotary drilling system being comprised of a rotatable drilling string, a drilling string communication system and a drilling direction control device, the drilling direction control device comprising a deflectable drilling shaft connected with the drilling string, the method comprising the following steps:

(a) orienting the drilling string at a desired orientation;

(b) sensing the desired orientation of the drilling string with the drilling string communication system;

(c) communicating the desired orientation of the drilling string to the drilling direction control device; and

(c) actuating the drilling direction control device to deflect the drilling shaft to reflect the desired orientation.

US 6,340,064 B2

BI-CENTER BIT ADAPTED TO DRILL CASING SHOE

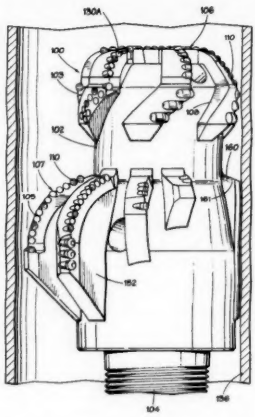
Coy M. Fielder, Cypress, and Rogerio H. Silva, Spring, both of Tex., assignors to Diamond Products International, Inc., Houston, Tex.

Provisional application No. 60/118,518, filed on Feb. 3, 1999. This application Sep. 8, 1999, Appl. No. 392,043.

Int. Cl. E21B *10/26*

U.S. Cl. 175—385 **35 Claims**

1. A bi-center bit adapted to be consecutively used in casing and in formation without the need of removing the bit from the borehole, said bit comprising: a bit body defining a proximal end adapted for connection to a drill string, a distal end and a pass-through gauge, where the distal end defines a pilot bit and an intermediate reamer section, where each the pilot and reamer section define a cutting face; and a plurality of cutting or wear elements situated on cutting blades disposed about the cutting face of the pilot and reamer sections, where the cutting or wear elements disposed on one or more of the blades which extend to or are proximate to the pass-through gauge define a backrake angle, a



skew angle and an angle between the line of contact on the cutting or wear element and the material to be drilled of between 5–45°.

US 6,340,065 B1

LOW VIBRATION OMNI-DIRECTIONAL WHEEL

Donald Barnett Harris, Arlington, Va., assignor to Airtrax Corporation, Arlington, Va.

Filed Apr. 14, 2000, Appl. No. 549,998

Int. Cl. B62D *57/00;* **B60B** *19/12*

U.S. Cl. 180—7.2 **15 Claims**

1. A wheel comprising:

a hub;

a plurality of roller mounting brackets coupled to said hub; and

a plurality of rollers each rotatably coupled to at least one of said roller mounting brackets at a roller mounting angle between 20 and 90 degrees, said rollers comprising;

a core rotatably coupled to said roller mounting bracket, said core having a first end and a second end, and

a contact surface of elastomeric material coupled to and radially disposed about said core with a volumetric shape such that the exterior profile of said contact surfaces of all said rollers forms a noncircular profile when viewed from a perspective laterally displaced from and coincident with the centerline of said hub.

US 6,340,066 B1

POLLUTANT TREATING DEVICES AND METHODS OF MAKING THE SAME

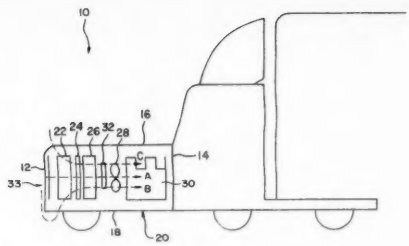
Joseph C. Dettling, Howell; John J. Steger, Pittstown; Michael Spencer, Somerset, all of N.J., and Robert V. Russo, Brooklyn, N.Y., assignors to Engelhard Corporation, Iselin, N.J.

Continuation-in-part of application No. 08/537,208, filed on Sep. 29, 1995, now abandoned, which is a continuation-in-part of application No. 08/537,206, filed on Sep. 29, 1995, now abandoned, which is a continuation-in-part of application No. 08/410,445, filed on Mar. 24, 1995, now abandoned, which is a continuation-in-part of application No. 08/376,332, filed on Jan. 20, 1995, now abandoned. This application Jan. 19, 1996, Appl. No. 588,972.

Int. Cl. B62D *63/02*

U.S. Cl. 180—54.1 **5 Claims**

1. A motor vehicle comprising:



an engine compartment;

at least one motor vehicle component selected from the group consisting of a radiator, an air conditioner condenser, and an air charge cooler, located in a flow pattern of ambient air passing through the engine compartment;

a pollutant treating device within the engine compartment located in proximity to the at least one motor vehicle component and in the flow pattern of the ambient air, for treating pollutants present in ambient air, the pollutant treating device comprising, at least one pollutant treating component comprising a pollutant treating composition, said pollutant treating component positioned in at least one normal flow pattern of the ambient air within the engine compartment for the purpose of removing pollutants from the ambient air and for returning the treated air to the atmosphere, wherein the pollutant treating composition is selected from the group consisting of a catalytic material, an adsorbent material and combinations thereof; and washing means for washing the pollutant treating device located in the engine compartment.

US 6,340,067 B1

BICYCLE EQUIPPED WITH DRIVE ASSIST

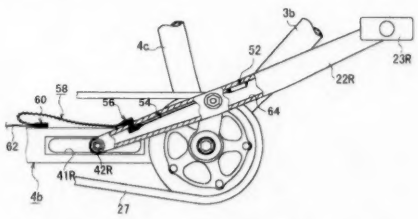
Nobuhiro Fujiwara, and Atsushi Mamiya, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Nov. 8, 1999, Appl. No. 435,631

Claims priority, application Japan, Nov. 11, 1998, 10-320752

Int. Cl. B62K *11/00*

U.S. Cl. 180—206 **4 Claims**



1. A bicycle equipped with a drive assist comprising: a drive assist attached to a driving wheel; a sprocket provided near a bottom bracket point of a front frame comprising a bicycle body; driving power transmission means attached between said sprocket and a rear wheel; a pair of pedal levers having a phase difference of 180°; a crank lever provided between said sprocket and one of said pedal levers to transmit a rotation force to said sprocket; and a sliding portion serving as a swing fulcrum of said pedal lever, wherein a slide pin is provided on one end of said pedal lever slides within said sliding portion in accordance with the rotation of said pedal lever to transmit a rotation force generated in accordance with the rotation of said pedal lever to said rear wheel through said sprocket, a pedaling force sensor attached to an inner or outer surface of said pedal lever at its portion in which a strain is large and which approximately reciprocates an output from said pedaling force sensor is supplied through a signal wire to a controller which controls said drive assist and said bicycle controls

an assist timing at which said drive assist is used as a pedal drive assist means based on the output from said pedaling force sensor.

US 6,340,068 B1

USE OF A MATERIAL WITH A HIGH INTERNAL DAMPING FOR A COMPONENT OF A SOUND-EMITTING MACHINE

Jürgen Frey, Fellbach; Ulrike-Christiane Huber, München, and Jürgen Schnur, Ditzingen, all of Germany, assignors to DaimlerChrysler AG, Stuttgart, Germany

Filed Oct. 7, 1999, Appl. No. 413,853

Claims priority, application Germany, Oct. 7, 1998, 198 46 118; Oct. 7, 1998, 198 46 117

Int. Cl. F16F *7/00*

U.S. Cl. 181—207 **24 Claims**

1. A sound-generating or sound-emitting machine having a component comprising a material with a high internal damping and tensile strength, said material comprising:

a metallic base material comprising at least one of a light metal or a light metal alloy; and

a metallic alloy phase having at least a partially martensitic structure and between 48 and 52 atomic % Ni or Ti;

wherein the component is arranged in a sound-generating or sound-conducting flux of force of the machine.

US 6,340,069 B1

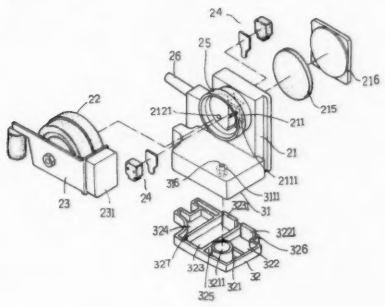
SOUND ELIMINATION STRUCTURE FOR AIR PUMP

Chiao-Ming Wang, Taichung Hsien, Taiwan, assignor to Meiko Pet Corporation, Taichung Hsien, Taiwan

Filed Jul. 19, 2000, Appl. No. 619,273

Int. Cl. F01N *1/08;* **F04B** *39/12*

U.S. Cl. 181—272 **3 Claims**



1. A sound elimination structure for an air pump comprising: a body (**21**), a compression cup (**22**), a vibration crank (**23**), and two anti-reverse structures (**24**), wherein, said body (**21**) is separated into an air inlet chamber (**211**) and an air outlet chamber (**212**) and has a first side provided with a washer (**215**) and a cover plate (**216**) and a second side provided with a lug (**25**), said air inlet chamber (**211**) is provided with an air input hole (**2111**) and an air inlet hole (**213**), said air outlet chamber (**212**) is provided with an air output hole (**2121**) and an air outlet hole (**214**), said vibration crank (**23**) has a first side secured on said compression cup (**22**) which is mounted on said lug (**25**) and a second side provided with a magnet (**231**) co-operating with an external electromagnetic device, each of said air input hole (**2111**) and said air output hole (**2121**) defines a recess for receiving an anti-reverse structure (**24**), the improvement comprising:

said body (**21**) provided with a sound elimination device which comprises an air chamber box, and an air chamber cover, wherein,

said air chamber cover is provided on one side of said body (**21**), and is separated by a plurality of baffles into a first chamber, a second chamber, a third chamber, and a fourth chamber, an air inlet guide hole defined in said first chamber and connecting to an external air extraction hole, an air inlet chamber air inlet hole defined in said second chamber and connecting to said air inlet chamber of said body, an air outlet chamber air outlet hole defined in said third chamber and connecting to said air outlet chamber of said body, an air conveying hole defined in said fourth chamber and connecting to an air outlet tube of said body, a guide hole defined between said first chamber and said second chamber; and

said air chamber box is separated by a plurality of baffles into an air inlet cabin, a first circuitous chamber, a second circuitous chamber, and an air guide chamber, each of said first circuitous chamber and second circuitous chamber provided with a catch plate which is fitted in said air inlet chamber air inlet hole and said air outlet chamber air outlet hole, and a guide hole defined between said second circuitous chamber and said air guide chamber.

US 6,340,070 B1

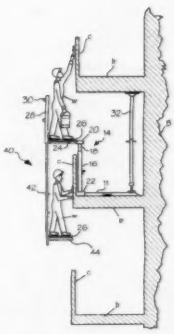
ADJUSTABLE CANTILEVER SCAFFOLDING

John W Villareal, Jr., and Mark A Austin, both of P.O. Box 2022, Santa Rosa Beach, Fla. 32459

Filed May 22, 2000, Appl. No. 576,378

Int. Cl. E04G *3/00*

U.S. Cl. 182—82 **5 Claims**



1. An adjustable scaffold for performing maintenance and repairs on the outside of an existing multi-story building, said scaffold being mounted on an exterior supporting surface such as a balcony, said surface including an upstanding safety wall adjacent a free edge thereof opposite an exterior building wall, said scaffold including cooperating laterally spaced scaffold assembly members for supporting workboards therebetween thereby providing a platform for supporting a workman,

each scaffold assembly member comprising:

an elongated support foot extending across and positioned on said surface and including an inner end adjacent said building wall and an outer end adjacent said safety wall,

means adjacent said building wall securing the inner end of said support foot to said supporting surface by applying a downward force on an upper surface of said support foot,

an upright standard secured to said support foot adjacent said safety wall,

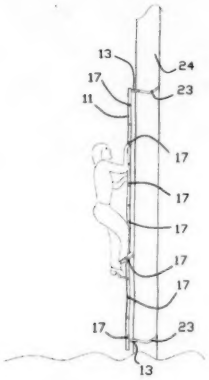
means for adjusting the height of said upright standard to extend its upper end to project above said safety wall,

a supporting beam secured to said upright standard, said supporting beam extending substantially horizontally outwardly over the top of said safety wall a distance sufficient to provide for the placement of said workboards thereon,

an upright safety standard secured to the end of said supporting beam, and

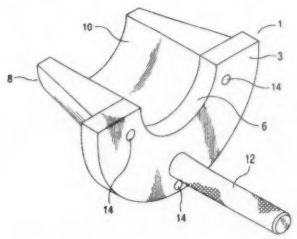
said support foot being unobstructed between the location of the upright standard adjacent the outer end and the location of the securing means adjacent the inner end whereby said scaffold assembly members provide ample space on said supporting surface for unencumbered movement of workmen closely adjacent said scaffold.

US 6,340,071 B1
RUNG-FOLDABLE LADDER DEVICE
Gerhard M. Diekemper, 20400 Walcott Rd., Carlyle, Ill. 62231
Filed Apr. 27, 2001, Appl. No. 844,325
Int. Cl. E04G *3/00*; **A62B** *1/20*
U.S. Cl. 182—100 **6 Claims**



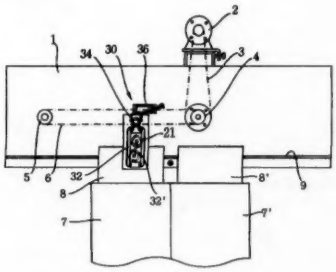
1. A rung-foldable ladder device comprising:
an elongate tubular support member;
a plurality of bracket members being securely attached to said elongate tubular support member and being adapted to removably fasten with straps about an upright structure;
a plurality of rung members being pivotally attached to said elongate tubular support member; and
a cable being attached to said plurality of rung members for pivoting said rung members against said elongate tubular support member.

US 6,340,072 B1
GREASE DAM FOR FILLING A WHEEL HUB CAVITY WITH GREASE AND METHOD OF USING SAME
Stephen Mark Lannan, Camden, S.C., assignor to Dana Corporation, Toledo, Ohio
Filed Dec. 23, 1999, Appl. No. 471,158
Int. Cl. F16C *1/24*
U.S. Cl. 184—5.1 **10 Claims**



1. A combination wheel assembly and removable grease dam for facilitating filling grease within a cavity of said wheel assembly,
said wheel assembly comprising;
a wheel hub rotatably mounted onto a spindle, said spindle being disposed within said wheel hub and said cavity being defined by a space therebetween;
said grease dam comprising;
a main portion having a surface corresponding to and continuously engaging an outer face of said wheel hub;
a dam portion extending from said main portion into said wheel hub and said spindle, said dam portion having an external surface correspondingly contoured to and engaging an inner peripheral surface of said wheel hub, said dam portion having an inner surface substantially corresponding to and engaging an external surface of said spindle; wherein said dam portion occupies at least 50% of an annular space between said wheel hub and said spindle to block egress of grease to facilitate at least a 50% fill level of grease within said cavity.

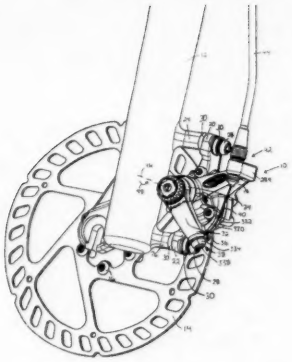
US 6,340,073 B1
ELEVATOR DOOR SYSTEM
Gwang Nam Lee, Anyang-shi; Hak Gi Han, Seoul, and Woo Young Lim, Ilsan-shi, all of Rep. of Korea, assignors to LG Industrial Systems Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 7, 1999, Appl. No. 455,788
Claims priority, application Rep. of Korea, Dec. 7, 1998, 98-53403
Int. Cl. B66B *13/12*; *13/20*
U.S. Cl. 187—309 **5 Claims**



1. Elevator door system comprising:
a hatch door mounted on each floor in a building through which passengers board on/off an elevator;
a car door installed to an elevator car, through which passengers board on/off the elevator;
a motor mounted on the elevator car for providing rotating force to open and close the hatch door and the car door;
power transmitting means for converting the rotating force to power in order to move the hatch door to an opening or closing position;
a rack connected to the power transmitting means for possibly moving horizontally in accordance with the power transmitting means;
a pinion engaged with the rack, the pinion rotating by horizontal movement of the rack;
clutch means connected to the pinion for transmitting or cutting off power toward the hatch door; and
door lock means engaged with the clutch means, the door lock means positioned in a lock release state in which the hatch door is movable when the clutch means transmits power, while positioned in a lock state for fixing position of the hatch door when the clutch means cuts off power.

US 6,340,074 B1
PAD WEAR COMPENSATOR FOR A DISC BRAKE CALIPER
Wayne R. Lumpkin, Littleton, and Michael T. Mayberry, Denver, both of Colo., assignors to Avid LLC, Englewood, Colo.
Provisional application No. 60/195,560, filed on Apr. 6, 2000. This application Aug. 28, 2000, Appl. No. 649,243.
Int. Cl. B62L *5/00*
U.S. Cl. 188—26 **21 Claims**

21. A pad wear compensation apparatus for a disc brake caliper, the disc brake caliper having a housing containing a pair of



opposing brake pad assemblies configured to reside on opposite sides of a disc operatively associated therewith, at least one brake pad assembly being advanced and retracted relative to the disc by a drive mechanism along an advancement axis to effect braking, the pad wear compensation apparatus being operatively associated with at least one of the brake pad assemblies to advance the brake pad assembly along the advancement axis as it wears, the pad wear compensation apparatus comprising:

an adjustment knob attached to the housing for rotation about a rotation axis; and

a rotary to linear linkage between the at least one brake pad assembly and the knob providing axial advancement of the brake pad assembly relative to the housing upon axial rotation of the knob in a select direction.

US 6,340,075 B1

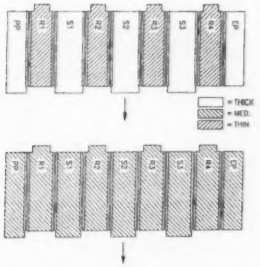
THREE RUN DISK BRAKE STACK AND METHOD OF ASSEMBLY

Lowell D. Bok, Anna; Eric J. Reed, Troy, and Mark W. Prenger, Minster, all of Ohio, assignors to The B. F. Goodrich Company, Charlotte, N.C.

Filed Nov. 24, 1999, Appl. No. 449,033

Int. Cl. F16D *55/02*

U.S. Cl. 188—71.7 **17 Claims**



1. A brake disk assembly comprising an end plate, a pressure plate and rotor and stator disks axially aligned and disposed therebetween, wherein said brake disks comprise disks of a first group and disks of a second group in an axially aligned and interleaved relationship, each of the disks of the first group and said second group having oppositely disposed wear surfaces, each disk in said first group of disks having an initial available wear portion of a first thickness and each disk in said second group of disks having an available wear portion of a second thickness, said second thickness being approximately one third of the first thickness, whereby at an overhaul, the available wear portions of the second group of disks are substantially fully worn away and the available wear portions of the first group of disks are approximately two thirds of the initial first thickness and said second group of disks is replaced by a group of disks having approximately two thirds of the wear thickness of the initial first thickness of said first group of disks, whereby said first and said second replacement groups of disks are of approximately the same thickness.

US 6,340,076 B1

VEHICULAR DISK BRAKE

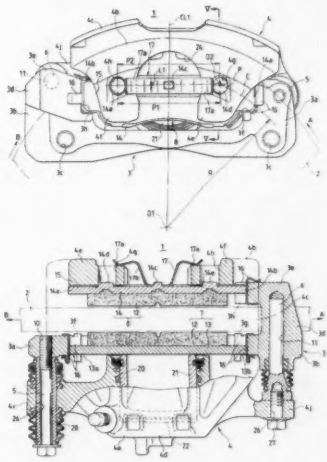
Takenori Tsuchiya, Nagano, Japan, assignor to Nissin Kogyo Co., Ltd., Nagano, Japan

Filed Sep. 20, 1999, Appl. No. 399,165

Claims priority, application Japan, Sep. 24, 1998, 10-270051; Sep. 28, 1998, 10-272817

Int. Cl. F16D *65/14*

U.S. Cl. 188—73.45 **18 Claims**



1. A vehicular disk brake, comprising:

a disk rotor;

a caliper bracket fixed to a vehicle body on one side of said disk rotor;

a caliper body having an acting portion and a reacting portion which are disposed opposite to each other in the both sides of said disk rotor, and a bridge portion coupling said acting portion and said reacting portion in such a manner as to stride over the outside of the disk rotor, said reacting portion of said caliper body having a protrusion or a fitting hole;

a pair of slide pins provided in both ends of said caliper body in a radial direction of said disk rotor so that said caliper body is movably supported in an axial direction of said disk rotor; and

a pair of friction pads oppositely disposed between said acting and reacting portions of said caliper body in such a manner that said disk rotor is intervened therebetween, said friction pad on a reacting portion side having one of said protrusion or said fitting hole so as to fit with said reacting portion of said caliper body,

wherein the braking torque generated in the friction pad of the reacting portion side in the direction in which a vehicle travels forward is rotatably supported and is transmitted directly to said caliper bracket, the braking torque generated in said friction pad on an acting portion side in the direction in which the vehicle moves backward and forwards is rotatably supported by said caliper bracket, and

the braking torque generated in said friction pad on the reacting portion side in the direction in which the vehicle moves backward is rotatably supported by said reacting portion of said caliper body by fitting said protrusion to said fitting hole.

US 6,340,077 B1

ELECTROMECHANICAL WHEEL BRAKE SYSTEM

Wolfram Schaffer, Hemmingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

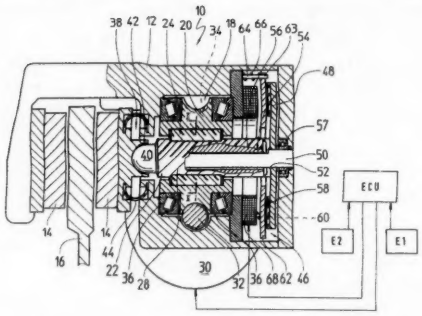
PCT No. PCT/DE98/01989, § 371 Date Aug. 25, 2000, § 102(e) Date Aug. 25, 2000, PCT Pub. No. WO99/25987, PCT Pub. Date May 27, 1999

PCT Filed Jul. 16, 1998, Appl. No. 554,453

Claims priority, application Germany, Nov. 13, 1997, 197 50 272; May 27, 1998, 198 23 568

Int. Cl. F16D *65/36*

U.S. Cl. 188—156 **12 Claims**



1. An electromechanical wheel brake device (**10**) for a motor vehicle, comprising an electric motor (**30**), a screw link actuator (**18**) that is embodied as selflocking-free, a spindle nut (**20**) that is driven in forward and reverse rotational directions by the electric motor (**30**), a rotatable threaded spindle (**22**), a releasable rotation prevention device (**46**) which is disposed in stationary fashion in the wheel brake device (**10**) and is embodied in a form of a switchable electromagnetic clutch connected to the threaded spindle (**22**), a frictional brake lining (**14**) which, by means of the screw link actuator (**18**) is electromotively pressed against and released from a brake body (**16**) connected to a vehicle wheel in a rotationally fixed manner, the threaded spindle (**22**) is both rotated and axially moved, so that the frictional brake lining (**14**) can be pressed against the brake body (**16**) and released from the brake body (**16**) by means of the threaded spindle (**22**) of the screw link actuator (**18**), and the rotation prevention device (**46**) keeps the threaded spindle (**22**) rotationally fixed during the electromotive application and release of the frictional brake lining (**14**) so that the threaded spindle can only move axially, but in the event that the frictional brake lining (**14**) cannot be electromotively released due to a malfunction, the rotation prevention device permits a rotation and axial movement of the threaded spindle (**22**).

US 6,340,078 B1

BRAKING DEVICE WITH CLOSING SERVO CONTROL FOR MOVABLE CABINET/FURNITURE PARTS

Adolf Scheible, Lauterach, Austria, assignor to Grass GmbH, Voralberg, Austria

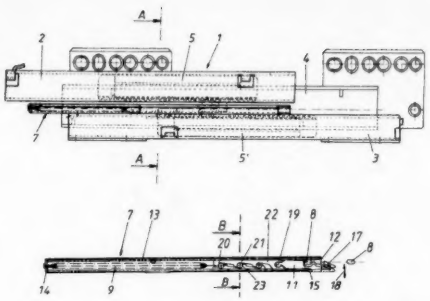
Filed Aug. 5, 1999, Appl. No. 368,791

Claims priority, application Germany, Aug. 6, 1998, 198 35 466

Int. Cl. B60T *13/04*

U.S. Cl. 188—166 **13 Claims**

1. Braking device with closing servo control for movable cabinet or furniture parts, comprising one of a fixed and a movable cabinet or furniture part in an arranged casing in which a pull-in device is located that has a mechanical energy store and includes a connected guide control element, which is movable in the casing, and a driving pin that is always fastened to another cabinet or furniture part and works together with the control element; a connected braking element that is guided and movable in the casing between the energy store and the control element; and the braking element



having a plurality of braking grips that lie at least partially on an inner wall of the casing.

US 6,340,079 B1

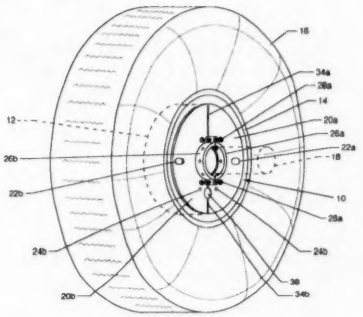
BRAKE DRUM COVER SYSTEM

Robert Perry, 10015 Fenner Ave. SE., Delano, Minn. 55328

Filed Apr. 13, 2000, Appl. No. 548,646

Int. Cl. F16D *65/01*

U.S. Cl. 188—218 A **1 Claim**



1. A brake drum cover system for engagement over an axle next to brakes of a wheel comprising:

a. two opposing semicircular plates with an axle housing radius;

b. opposing collars about said axle housing radius including opposing flanges with a hole in each end of said flange;

c. means for adjusting distance of said flanges with respect to said axle;

d. a plurality of screws in the opposing collars;

e. said screws securing the brake drum cover system to the axle housing; and,

f. means for vertical adjustment of the brake drum cover system.

US 6,340,080 B1

APPARATUS INCLUDING A MATRIX STRUCTURE AND APPARATUS

J. David Carlson, Cary, N.C., assignor to Lord Corporation, Cary, N.C.

Continuation-in-part of application No. 08/959,775, filed on Oct. 29, 1997. This application May 6, 1999, Appl. No. 306,535.

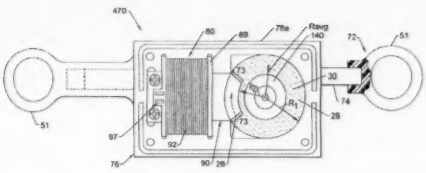
Int. Cl. F16F *9/53*

U.S. Cl. 188—267.2 **36 Claims**

1. An apparatus, comprising:

(a) a first component,

(b) a second component including;



a housing,

a first member mounted stationary relative to the housing, and

a second member spaced from the first member to form a working space therebetween, the second member rotatable relative to the first member,

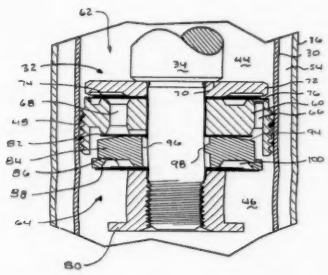
a matrix structure disposed in the working space,

a volume of a field responsive medium retained in the matrix structure, substantially the entire volume of the field responsive medium being supported by the matrix during operation of the apparatus, and

a field generator for generating a flux in said members thereby producing a field in the working space to change the rheology of said medium and resultantly produce a resistance to relative motion between said members, and

(c) a transmission converting linear motion of the first component to rotary motion of the second member.

US 6,340,081 B1
SHOCK ABSORBER HAVING PORTED PLATE LOW SPEED TUNABILITY
Daniel Keil, Temperance, Mich., assignor to Tenneco Automotive Inc., Lake Forest, Ill.
Filed Jun. 23, 2000, Appl. No. 603,444
Int. Cl. F16F *9/34*
U.S. Cl. 188—322.15 **13 Claims**



1. A damper comprising:

a pressure tube forming a working chamber;

a piston rod extending into said working chamber;

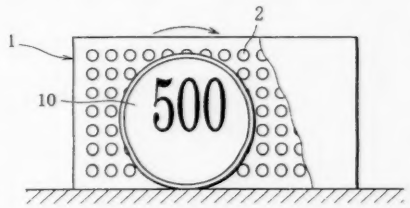
a piston assembly attached to said piston rod and disposed within said working chamber, said piston assembly dividing said working chamber into an upper working chamber and a lower working chamber, said piston assembly comprising:

a piston defining a rebound fluid passage extending between said upper and lower working chambers;

a rebound valve assembly attached to said piston for controlling fluid flow through said rebound fluid passage;

a rebound bleed valve assembly attached to said piston rod for bypassing said rebound valve assembly, said rebound bleed valve assembly including a ported plate disposed adjacent said rebound valve assembly, said ported plate and said piston rod defining a rebound bleed passage extending between said upper and lower working chambers, said rebound bleed valve assembly further comprising a rebound bleed disc disposed adjacent said ported plate, said rebound bleed disc defining at least one slot in communication with said rebound bleed passage for limiting fluid flow through said rebound bleed valve assembly for tuning said damper.

US 6,340,082 B1
COIN DISCRIMINATING APPARATUS
Larry J. House, and Richard J. Davis, both of Columbus, Ohio, assignors to Japan Tobacco Inc., Tokyo, Japan
Filed Oct. 22, 1999, Appl. No. 422,801
This patent is subject to a terminal disclaimer.
Int. Cl. G07D *5/08*
U.S. Cl. 194—317 **20 Claims**



15. A coin discriminating apparatus for discriminating denominations of coins, comprising:

a plurality of eddy current induction coils arranged two-dimensionally so as to face a surface of a coin;

high-frequency exciting means for exciting said eddy current induction coils at high frequency to apply a high frequency electromagnetic field locally to the coin and thereby induce eddy current in the coin;

low-frequency exciting means for exciting said eddy current induction coils at low frequency to apply a low-frequency electromagnetic field to the coin and thereby induce eddy current in the coin, and wherein said plurality of eddy current induction coils are arranged on a plane in a rectangular grid or other suitable geometric form to constitute a coil array, said high-frequency exciting means successively excites each of said eddy current induction coils constituting the coil array at high frequency, thereby scanning the entire surface of the coin, and said low-frequency exciting means excites only specified ones of said eddy current induction coils in the coil array at low frequency;

impedance measuring means for detecting impedances of said eddy current induction coils applying the electromagnetic field to the coin, the impedances varying depending on the eddy current induced in the coin;

material determining means for comparing the impedances of said eddy current induction coils detected when said eddy current induction coils are excited at low frequency with a standard impedance value, obtained in advance using a true coin, to determine a material of the coin;

feature extracting means for obtaining information on surface displacement irregularities of an embossing on the surface of the coin, based on the impedances of said eddy current induction coils detected when said eddy current induction coils are excited at high frequency; and

pattern determining means for comparing the information on surface displacement irregularities of the embossing obtained by said feature extracting means with information on irregularities of an embossing of the true coin obtained beforehand, to identify a denomination of the coin.

US 6,340,083 B1

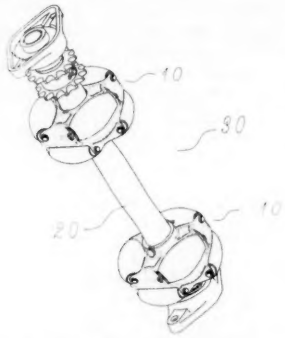
TRANSMISSION WHEEL AND A PLATFORM TRANSMISSION APPARATUS FORMED BY SAID WHEELS

Yuanda Zhou; Li Han; Jack Zhang; James Xue; Mike Xiang, and Kun Bao, all of Shenzhen, China, assignors to Shenzhen CIMC-Tianda Airport Support Ltd., Shenzhen, China

Filed Oct. 26, 1999, Appl. No. 420,547

Int. Cl. B65G *47/10*

U.S. Cl. 198—370.09 **12 Claims**



1. A transmission wheel comprising a wheel frame centered with a hole, for fastening to a drive shaft and driving cargo, wherein first and second pivotable ball roller means are provided on said wheel frame, in which

the first pivotable ball roller means comprises several ball rollers which are arranged on several respective supports protuberated axially from said wheel frame, and which are evenly arranged along the circle of circular arc camber of each ball roller; and

the second pivotable ball roller means comprises several ball rollers which are arranged on several respective supports protuberated axially from said wheel frame, evenly arranged along the circle of circular arc camber of each ball roller and staggered with respect to said several ball rollers of said first ball roller means.

US 6,340,084 B1

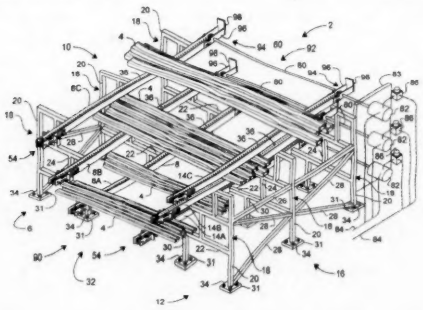
LUMBER STAGING DEVICE

Terry E. Burcaw, 11014 Lapaz Ct., Spring Hill, Fla. 34608

Filed Dec. 24, 1999, Appl. No. 471,294

Int. Cl. B65G *42/26;47/68*

U.S. Cl. 198—435 **24 Claims**



1. A lumber staging device having a lumber receiving station and a lumber discharge station disposed at opposite end portions thereof for positioning a supply of lumber of different lengths within arms reach of an operator of an automated saw comprising a first multi-level lumber conveying assembly including a first set of conveyors disposed on one side portion of said lumber staging device and a second multi-level lumber conveying assembly including a second set of conveyors disposed on opposite side portions of said lumber staging device cooperatively forming multi-level pairs of corresponding conveyors disposed on opposite side portions of said lumber staging device to convey lumber supported respectively thereon, each said pair of corresponding conveyors is operatively coupled to a corresponding conveyor drive to selectively convey lumber supported therebetween from said lumber receiving station to said lumber discharge station each said pair of corresponding conveyors being spaced apart such that lumber is supported across the width of said lumber staging device to allow removal thereof transversely of the length.

US 6,340,085 B1

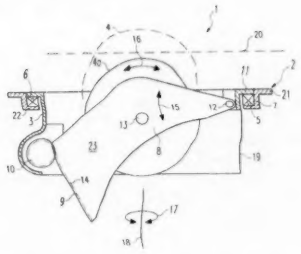
ROLLER DRIVE UNIT

Thomas Huber, Iffeldorf; Martin Dürrwächter, Irschenberg; Matthias Urch, Wörth, and Benedikt Kieser, Miesbach, all of Germany, assignors to Telair International GmbH, Hausham, Germany

Filed Feb. 22, 1999, Appl. No. 255,193

Int. Cl. B65G *13/02*

U.S. Cl. 198—782 **9 Claims**



1. A roller drive unit for the transportation of freight containers in a plurality of directions comprising:

a substantially annular fixing means for attachment of the roller drive unit to a floor of a cargo hold;

a drive roller for rotational engagement with a freight container to be transported; and

a carrier means for the drive roller and relative to which the drive roller can be retracted and can be raised into an operation position for rotational engagement with said freight container, the carrier means being located within the annular fixing means and being rotatable relative thereto in a direction perpendicular to the rotational plane of the floor, wherein the carrier means defines a supporting surface and the fixing means defines a bearing surface which bears the supporting surface of the carrier means, and wherein the carrier means defines a substantially cylindrical hollow body that is provided with a flange, an undersurface of the flange defining the supporting surface.

US 6,340,086 B1

MEDIA STORAGE APPARATUS

Michael P. McConnaughy, 19516 N. 17st Ave., Glendale, Ariz. 85308, and Darren K. Grady, 12209 S. Bannock, Phoenix, Ariz. 85044

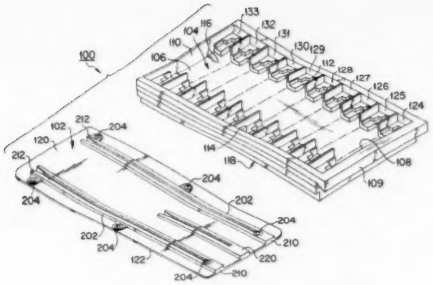
Filed Jan. 8, 2000, Appl. No. 479,806

Int. Cl. B65D *85/575;85/57;* **A47G** *29/00*

U.S. Cl. 206—307.1 **8 Claims**

1. A media storage device for storing a plurality of media, the media storage device comprising:

a tray including a bottom panel and a plurality of media storage bins,



each media storage bin including a front panel and a first shoulder member, the first shoulder member including first and second shoulders;

the first shoulder member including a first ledge disposed above the bottom panel; and

the media storage device further including a second shoulder member disposed above the first shoulder member, the second shoulder member including first shoulders, second shoulders and a third shoulder;

each of the media storage bins including a cavity defined by the first ledge and the second shoulders of the second shoulder member.

6. A media storage device for storing a plurality of media, the media storage device comprising:

a tray including a bottom panel and a plurality of media storage bins,

each media storage bin including a front panel and a first shoulder member, the first shoulder member including first and second shoulders;

the first shoulder member including a first ledge disposed above the bottom panel; and

the media storage device further including a second shoulder member disposed above the first shoulder member, the second shoulder member including first shoulders, second shoulders and a third shoulder;

the second shoulder member including a second ledge disposed above the bottom panel and the first ledge;

each of the media storage bins includes a back panel disposed above the second shoulder member; and

each of the media storage bins including a cavity defined by the second ledge and the back panel for that media storage bin.

US 6,340,087 B1

FLAP RETENTION APPARATUS AND METHOD FOR PACKAGING SYSTEMS

John William Bridges, Pflugerville, and Nancy Shubeck Romano, Austin, both of Tex., assignors to Dell Products, LP., Round Rock, Tex.

Filed Aug. 29, 2000, Appl. No. 650,308

Int. Cl. B65D *81/02*

U.S. Cl. 206—523 **19 Claims**

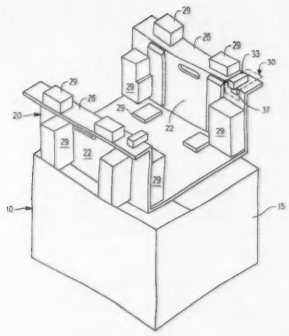
1. A packaging device including:

(a) a panel;

(b) a flap member pivotally connected to the panel, the flap member movable between a first position with respect to the panel and a second position with respect to the panel;

(c) a retention member mounted on one of the flap member or the panel, a portion of the retention member extending over a peripheral edge of the one of the flap member or panel on which the retention member is mounted; and

(d) a capture element located on the other one of the flap member or the panel, the retention member and capture element making contact when the flap member is in the second position to retain the flap member in the second position.



US 6,340,088 B1

STORAGE CONTAINER FOR ELECTRONIC COMPONENTS

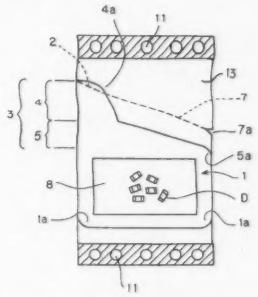
Akira Mouri; Kiyoyuki Nakagawa, both of Takefu, and Kenichi Fukuda, Sabae, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jul. 1, 1999, Appl. No. 345,730

Claims priority, application Japan, Jul. 28, 1998, 10-228604

Int. Cl. B65D *85/00*

U.S. Cl. 206—720 **23 Claims**



1. A storage container for storing a plurality of electronic components to be mounted using a mounting device, said storage container comprising:

a storage region having a width and capable of storing a plurality of electronic components;

a lead portion having a narrower width than the storage region, said lead portion being provided with a tapered guide angle such that its width becomes narrower toward one end thereof, said one end of the lead portion defining a discharge hole;

said lead portion includes a discharge hole side lead portion, an end of the discharge hole side lead portion forming said discharge hole and said discharge hole side lead portion having a tapered guide angle so that its width becomes narrower toward said discharge hole, said lead portion also including a storage region side lead portion, positioned between the storage region and the discharge hole side lead portion, said storage region side lead portion having a tapered guide angle so that its width becomes narrower toward said discharge hole side lead portion;

wherein when a plurality of electronic components are stored in the storage region and the storage container is used for supplying the plurality of electronic components to an electronic component injection hole of a mounting device, said discharge hole is opened and the electronic components can be

supplied from the storage region via the lead portion and the discharge hole, and then from the electronic component insertion hole of the mounting device to the mounting device; and an electronic component in the storage region.

US 6,340,089 B1

METHOD OF FABRICATING UNDULATING SCREEN FOR VIBRATORY SCREENING MACHINE

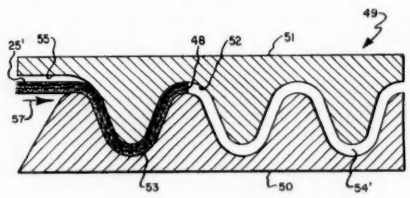
John J. Bakula, Grand Island, N.Y., assignor to Derrick Manufacturing Corporation, Buffalo, N.Y.

Continuation of application No. 09/318,339, filed on May 25, 1999, which is a division of application No. 08/955,342, filed on Oct. 21, 1997, now Pat. No. 5,958,236, which is a continuation-in-part of application No. 08/443,377, filed on May 17, 1995, now Pat. No. 5,783,077, which is a continuation of application No. 08/273,217, filed on Jul. 11, 1994, now Pat. No. 5,417,854, which is a continuation-in-part of application No. 08/127,800, filed on Sep. 28, 1993, now abandoned, which is a continuation-in-part of application No. 08/062,464, filed on May 14, 1993, now Pat. No. 5,417,858, which is a continuation-in-part of application No. 08/004,122, filed on Jan. 13, 1993, now abandoned. This application Feb. 2, 2000, Appl. No. 496,551.

This patent is subject to a terminal disclaimer.

Int. Cl. B07B *1/46; 1/49*

U.S. Cl. 210—388 **15 Claims**



1. A method of fabricating a screening screen assembly for a vibratory screening machine comprising the steps of providing a support screen and a fine screening screen, placing said support screen and said fine screening screen in superimposed relationship, providing spaced areas of plastic, fusing said spaced areas of plastic into said superimposed support screen and fine screen to form a bonded assembly with unobstructed areas of said superimposed support screen and fine screen between said spaced areas of plastic, and forming said bonded assembly into an undulating screen configuration having ridges and troughs.

US 6,340,090 B1

SUBSTRATE FIXTURING DEVICE

Hooshang Jahani, Fremont; Scott R. Bruner, San Jose, and Peter F. Smith, Los Gatos, all of Calif., assignors to Tooltek Engineering Corporation, Fremont, Calif.

Filed Jan. 7, 1999, Appl. No. 226,194

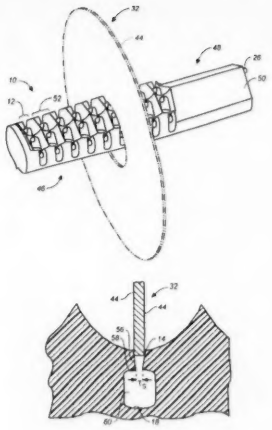
Int. Cl. A47G *19/08*

U.S. Cl. 211—41.1 **7 Claims**

1. A combination of a substrate and a substrate holder, the substrate holder comprising:

a mandrel having a slotted portion and a mounting portion; and

a plurality of substrate support slots perpendicular to an axis extending longitudinally along a length of said mandrel, each of the substrate support slots formed by a pair of converging support surfaces that terminate at support surface edges, and a gap formed between the support surface edges, the gap extending along the entire support surface and having a distance between the support surface edges which is less than a thickness of the substrate to be supported; and



a passage in each of the support slots below said gap, said passage configured to draw fluid away from the substrate when the substrate is supported in the support slot.

US 6,340,091 B1

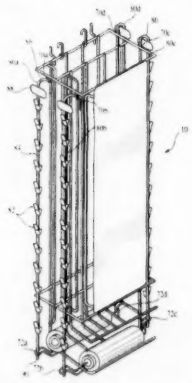
PRODUCT DISPLAY AND DISPENSING RACK

Derek Joseph Romeo, Evanston; Kristen Leanne Lake, Winnetka, both of Ill., and Charles J. Peters, Weston, Mass., assignors to American Tool Companies, Inc., Hoffman Estates, Ill.

Filed Jul. 27, 1999, Appl. No. 361,379

Int. Cl. A47F *1/04*

U.S. Cl. 211—59.2 **14 Claims**



1. A rack for displaying and dispensing a plurality of products and accessory products, said rack comprising:

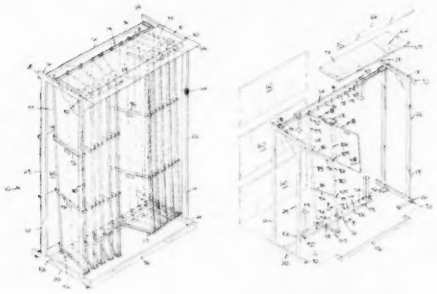
an elongated body having a top end and a bottom end, said body defining at least one vertically oriented interior chute, said at least one chute adapted to hold a plurality of vertically stacked products;

a signage panel mounted on at least one outside portion of said body;

an accessory display support means attached to said body;

an elongated accessory product display removably attached to and separable from said support means, said accessory product display including a wire that has a plurality of hooks mounted along said wire, said product display capable of retaining a plurality of accessory products.

US 6,340,092 B1
SPACE SAVER
Donald L. McGrath, Jr., P.O. Box 433, Orland Park, Ill. 60462
Filed Dec. 28, 2000, Appl. No. 750,823
Int. Cl. H47F *5/00*
U.S. Cl. 211—169 **17 Claims**



1. A display rack for ceramic tiles having two framed sides, a back and an open front comprising:

left and right frames having tops, bottoms, backs and fronts;

a top beam having a front, a back, a top, and a bottom connecting the back of the tops of the left and right frames;

a bottom beam having a front, a back, a top, and a base connecting the back of the bottoms of the left and right frames at a point forward of the position of the top beam;

a plurality of spaced apart angled pins located in the bottom of the top beam and in the top of the bottom beam, arranged in the form of equal arcs which have their apexes at the center of the fronts of the top and bottom beams, and the pins in the top beam are longer than the pins in the bottom beam;

a top covering at least the front portions of the left and right frames and a horizontal foot securing the front ends of the bottoms of the left and right frames;

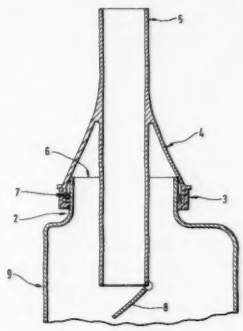
a plurality of wings removably mounted within the display rack, with the wings being rectangular frames, having sides, tops, bottoms, backs, and fronts being sized to be received within the display rack;

vertical holes in the top and bottom of the backs of the wings that mate with and are longer than the pins;

a plurality of U-shaped parallel channels having inner and outer sides, a back, and a front, mounted horizontally on opposite sides of the sides of the wings for receiving in a sliding relationship vertical ceramic tile sample boards; and

resilient bumpers attached to the wings.

US 6,340,093 B1
FUEL TANK
Thomas Zapp, Eschborn, Germany, assignor to Mannesmann VDO AG, Germany
Filed Apr. 27, 1999, Appl. No. 299,867
Claims priority, application Germany, May 4, 1998, 198 19 779
Int. Cl. B65D *47/00*
U.S. Cl. 220—86.1 **8 Claims**

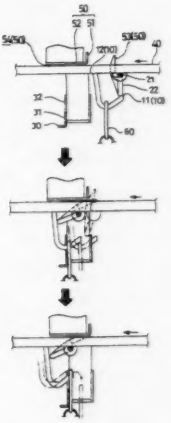


1. An automobile fuel tank assembly comprising:

(a) a fuel tank having an outwardly extending filler neck dimensioned to define a tank orifice providing manual access into the interior of the tank;

(b) a filler pipe including (i) a fuel flow directing pipe that extends through the tank orifice from the outside of the tank to the inside thereof, wherein the cross-sectional area of the pipe is less than the cross-sectional area of the filler neck and an annular space separates the filler neck from the fuel flow directing pipe; (ii) a sleeve located intermediate the ends of the flow directing pipe and extending between the filler neck and the flow directing pipe to seal the annular space therebetween; and (iii) means for releasably connecting the sleeve to the filler neck so that the filler pipe can be removed from the tank orifice when manual access into the tank is desired.

US 6,340,094 B1
PREMIUM SUPPLY APPARATUS AND LOCK MECHANISM OF HOOK FOR PREMIUM SUPPLY APPARATUS
Kozo Kawamura, Tokyo, Japan, assignor to Sammy Corporation, Tokyo, Japan
PCT No. PCT/JP98/02433, § 371 Date Apr. 10, 2000, § 102(e) Date Apr. 10, 2000, PCT Pub. No. WO99/21140, PCT Pub. Date Apr. 29, 1999
PCT Filed Jun. 2, 1998, Appl. No. 529,250
Claims priority, application Japan, Oct. 17, 1997, 9-285644
Int. Cl. G07F *11/00*
U.S. Cl. 221—79 **6 Claims**



1. A lock mechanism for dropping down a premium suspended in a base body at a predetermined drop position and for preventing the premium from dropping down at a position other than said predetermined drop position, comprising:

a base member;

a hook fixed to the base body, suspending the premium and capable of maintaining a state of being easily dropped; and

a lock portion for preventing the premium from dropping down by closing an open portion in the hook,

wherein the lock portion comprises a support point portion axially supported to the base body, a rotating piece capable of rotating to both of normal and inverse directions around

the support point portion and an operating portion for rotating the rotating piece, and

wherein said rotating piece is structured such that an end portion thereof is brought into contact with the hook at the position other than the predetermined drop position so as to close the open portion and at the predetermined position, the rotating piece is rotated to a position which does not prevent the premium from dropping down from the hook so that the premium can be taken out.

US 6,340,095 B1

AUTOMATIC MACHINE FOR DISPENSING MONEY

Jürgen Walter, Magstadt, Germany, assignor to Hess SB - Automatenbau GmbH, Magstadt, Germany

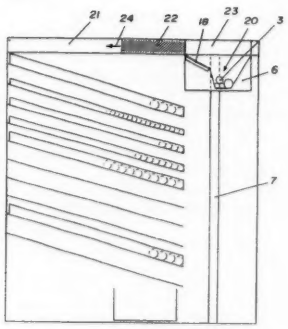
PCT No. PCT/DE98/01123, § 371 Date May 8, 2000, § 102(e) Date May 8, 2000, PCT Pub. No. WO98/48384, PCT Pub. Date Oct. 29, 1998

PCT Filed Apr. 22, 1998, Appl. No. 403,045

Claims priority, application Germany, Apr. 23, 1997, 197 17 010; Sep. 3, 1997, 197 38 521

Int. Cl. G07F *11/28*

U.S. Cl. 221—130 **15 Claims**



1. A device for dispensing one or more items comprising:

at least one magazine for stocking the one or more items,

at least one discharge device, for dispensing items from said at least one magazine,

a movable receiving device, provided inside the dispensing device and near whose path of motion said at least one magazine is disposed with a take-out end, and

at least one take-out device,

wherein the one or more items can be dispensed from said at least one magazine, via said discharge device, into said receiving device, when said receiving device is located near the take-out end of said at least one magazine, and

wherein said at least one take-out device is extensible for operative engagement with the one or more items and can take the one or more items out of said at least one magazine and depositing the one or more items into a removal tray of said receiving device.

US 6,340,096 B1

INVERTING SPRING ASSEMBLY

Gerald B. Zerfas, Grand Rapids, Mich., assignor to Z-Man Corporation, Grand Rapids, Mich.

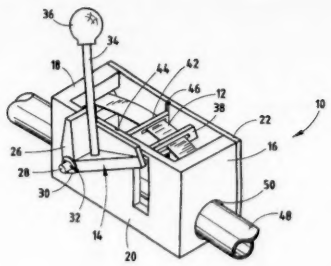
PCT No. PCT/US99/11533, § 371 Date Nov. 17, 2000, § 102(e) Date Nov. 17, 2000, PCT Pub. No. WO99/61825, PCT Pub. Date Dec. 2, 1999

PCT Filed May 25, 1999, Appl. No. 700,858

Int. Cl. B67B *7/00*

U.S. Cl. 222—1 **48 Claims**

1. An inverting spring assembly comprising:



a housing having a first support member, a second support member spaced opposite said first support member, a third support member, and a fourth support member spaced opposite said third support member, said first support member and said second support member being spaced at a distance Y from one another;

a resilient strip having a first end defining a first fixed pivot, a second end defining a second fixed pivot, and a length X wherein said resilient strip is flexible and unrestrained between said first and second pivots and wherein the distance X is greater than the distance Y, said resilient strip supported between said first support member and said second support member with said first end of said resilient strip supported by said first support member and said second end of said resilient strip supported by said second support member; and

an actuator interconnected with said housing for applying force to said resilient strip in both a first direction and a second direction thereby allowing said resilient strip to be repetitively moved between a first position and a second position.

US 6,340,097 B1

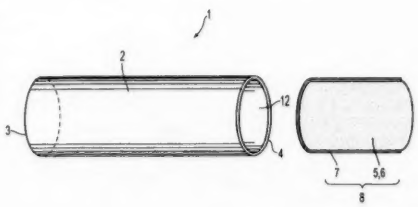
APPLICATOR WITH PROTECTIVE BARRIER

Keith R. D'Alessio, Cary; Andres Rivera, Wake Forest; Anthony S. Voiers, and Joe B. Barefoot, both of Raleigh, all of N.C., assignors to Closure Medical Corporation, Raleigh, N.C.

Continuation-in-part of application No. 09/176,889, filed on Oct. 22, 1998, now abandoned. This application Nov. 23, 1999, Appl. No. 447,045.

Int. Cl. B65D *37/00*

U.S. Cl. 222—12.9 **34 Claims**



1. An applicator comprising:

at least one crushable ampoule having an interior surface, an exterior surface, and a central portion, the crushable ampoule being crushable upon application of a force applied by a user's fingers, and

a cured barrier material affixed to at least one of said interior and said exterior surface, wherein said barrier material covers at least the central portion where the predetermined force is applied and protects against reorientation of shards created during crushing of said at least one ampoule.

US 6,340,098 B2

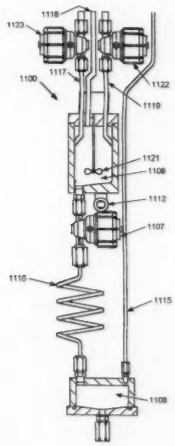
CHEMICAL DELIVERY SYSTEMS AND METHODS OF DELIVERY

David Soberanis, and Randy Forshey, both of Tracy, Calif., assignors to Semco Corporation, Livermore, Calif.

Continuation of application No. 09/568,926, filed on May 11, 2000, now Pat. No. 6,269,975, which is a division of application No. 09/224,607, filed on Dec. 31, 1998, now Pat. No. 6,098,843, which is a division of application No. 09/222,003, filed on Dec. 30, 1998, now abandoned. This application May 30, 2001, Appl. No. 870,227.

Int. Cl. B67D *5/08*

U.S. Cl. 222—56 **1 Claim**



1. A system for mixing a first liquid chemical with a second liquid chemical and delivering the mixture, comprising:

a multi-reservoir load cell assembly, including a main reservoir with a load cell and means for mixing the first liquid chemical with the second liquid chemical;

a buffer reservoir;

means for sealing and unsealing the buffer reservoir from the main reservoir;

means for supplying a first liquid chemical to the main reservoir until the multi-reservoir load cell assembly determines the main reservoir has a sufficient amount of the first liquid chemical;

means for supplying a second liquid chemical to the main reservoir until the multi-reservoir load cell assembly determines the main reservoir has a sufficient amount of the second liquid chemical; and wherein the system is adapted to mix the first liquid chemical with the second liquid chemical in the main reservoir and transport the mixture from the main reservoir to the buffer reservoir.

US 6,340,099 B1

CONTAINER WITH A STRUCTURAL IMPROVEMENT

Stanley Ho, Warren, N.J., and Mark Ho, Taipei, Taiwan, assignors to Allure Home Creation Co., Inc., Boonton, N.J.

Division of application No. 09/334,806, filed on Jun. 17, 1999, now Pat. No. 6,105,819, Provisional application No. 60/089,873, filed on Jun. 19, 1998. This application Aug. 21, 2000, Appl. No. 643,174.

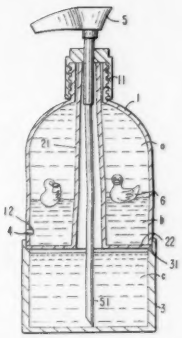
This patent is subject to a terminal disclaimer.

Int. Cl. B67D *5/60*

U.S. Cl. 222—78 **4 Claims**

1. A structure for a dispenser, comprising:

a transparent cavity which is hollow in the center, the cavity having a first end and a second end, wherein the first end has a threaded member, and a water intake opening positioned toward the second end of the cavity;



a circular dividing board comprising a circular disk fused with a tapered dispensing sleeve and having a threaded member, wherein the tapered dispensing sleeve penetrates through the center of the circular disk thus forming a passage to facilitate communication between the threaded member of the transparent cavity and a reservoir;

the reservoir has an interior surface, an exterior surface, a first end and a second end, wherein the interior surface is capable of holding cleansing solution and/or lotion and the first end of the reservoir is equipped with a threaded member to matingly fit and tightly seal with the threaded member of the circular dividing board which in turn merges with the transparent cavity to form one unit; and

at least one decorative item placed within the transparent cavity, the transparent cavity further having a water intake opening to receive at least two different liquids with at least one coloring agent, using the differences in the density of water, oil and the decorative item to enable the decorative item to remain afloat on the surface of the water thus creating an aesthetically pleasing effect, an actuator connected to the threaded member of the transparent cavity, and a dispensing tube connected to the actuator and extending downwardly into the reservoir to withdraw the cleansing solution and lotion from the reservoir;

whereby a functional yet aesthetically pleasing dispenser that is environmentally sound is created.

US 6,340,100 B1

APPARATUS FOR SECURING A BULK BAG TO A DISCHARGE SPOUT

David R. Gill, Stewartsville, N.J.; Dennis E. Graham, Bethlehem, and John F. Simonof, Jr., Easton, both of Pa., assignors to Flexicon Corporation, Phillipsburg, N.J.

Filed Jun. 7, 2000, Appl. No. 589,578

Int. Cl. B65D *35/56*

U.S. Cl. 222—105 **15 Claims**

10. A bulk bag unloading station comprising:

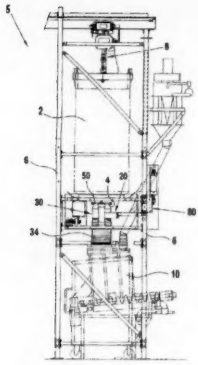
a frame structure;

a bag support assembly and a bulk bag supported thereon;

a discharge receptacle positioned below the bag support assembly;

a discharge tube secured to the frame structure at a position between the bag support assembly and the discharge receptacle, the tube having internal and external surfaces, a first end defining a free edge and a second end in communication with the discharge receptacle;

a clamp ring defining a channel configured to receive the free edge therein such that a portion of the channel overlies a portion of the internal surface and a portion of the external surface and defines a bag spout securing area;



an actuator assembly moveable between a first position where the clamp ring is spaced from the free edge and a second position where it overlies the free edge so that a spout of the bulk bag located in the channel contacts the internal surface and the external surface of the discharge tube.

US 6,340,101 B1

PROCESS AND DEVICE FOR DISPENSING A POWDERY PRODUCT

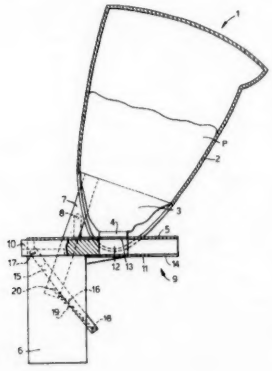
Maurice Adrianus Wilhelmus van Beek; Cornelis M Beijersbergen van Henegouwen; Lucas Alphonsus Maria Evers; Reni Louis Jean Lahaye; Marc van Megen, and Peter Joost Wieriks, all of Zeist, Netherlands, assignors to Unilever Patent Holdings BV, Vlaardingen, Netherlands

Filed Mar. 9, 2000, Appl. No. 522,036

Claims priority, application Netherlands, Mar. 9, 1999, 1011502

Int. Cl. A45D *24/22*

U.S. Cl. 222—203 **11 Claims**



1. Process for dispensing a powdery product (P) from a container (**1**) with a dispensing nozzle (**4**) aimed downwards, which comprises moving the container relative to the dispensing nozzle and deforming a flexible section (**3**) of the container (**1**) at least near the dispensing nozzle (**4**), by means of movement in a direction with a component at a right angle to the dispensing nozzle whereby bridge or tunnel formation of the powdery product at the nozzle is avoided by deformation of said flexible section.

US 6,340,102 B1

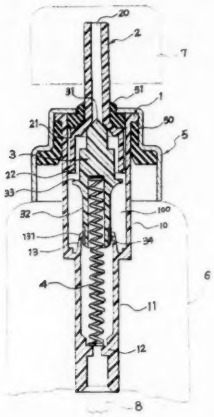
SEALING VALVE STRUCTURE FOR LIQUID SPRAYERS

Cheng-Yuan Su, 124, Section 4, Tung Ta Road, Hsinchu, Taiwan

Filed Feb. 19, 1999, Appl. No. 252,971

Int. Cl. B65D *88/54*

U.S. Cl. 222—321.2 **1 Claim**



1. An improved sealing valve structure for liquid sprayers, comprising a cylinder, a press element, a movable valve, a spring, and a securing element, wherein:

said cylinder is a tubular structure including an upper end portion of a larger diameter and a lower end portion of a smaller diameter, said upper end portion being communicated with said lower end portion, a tightening valve being integrally formed and extending from where said upper end portion joins said lower end portion, said tightening valve extending obliquely along a periphery of an inner hole of said lower end portion towards said upper end portion in a tapering form, an edge portion of said taper being configured to be a projecting annular tightening end adapted to tighten and seal said movable valve, a stop portion being provided at a lower portion of said lower end portion to receive said spring and to generate an upward tension with respect to said movable valve and said press element, said lower portion of said lower end portion being further provided with a connecting hole adapted to connect to a straw that can extend to a bottom portion of a container;

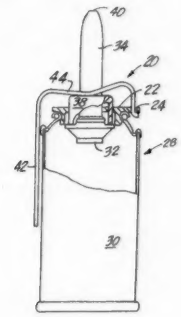
said press element is a two-section tubular element that connects a nozzle above and abuts against said valve below, said press element including an upper section forming a channel for ejection of liquid, and a lower section forming a flared, cup-shaped hood orifice, an edge of said hood orifice projecting outwardly to form a projecting ring, said press element being at said upper end portion of said cylinder, said projecting ring serving as an O-ring for said upper end portion of said cylinder, and being adapted to enclose said end portion of said cylinder to form a compression chamber; and

said movable valve is a stepped rod of concentric rod portions, said movable valve including an upper end forming a conical end, a lower end forming a sleeve portion, and a two-step planar pressure bearing portion provided between said conical end and said sleeve portion, said conical end urging upwardly against said channel of said press element, said sleeve portion having one end of said spring fitted therein, said spring forcing said movable valve to urge against said press element, a plurality of axially extending suction holes being provided on an outer side of a bottom end of said sleeve portion such that when said movable valve is located in an uppermost position, said suction holes allow the liquid to pass through said tightening valve into said compression chamber.

US 6,340,103 B1
DISPENSING MECHANISM FOR PRESSURIZED CONTAINER

Christian T. Scheindel, Randolph Center, and Dennis Dundas, East Bethel, both of Vt., assignors to Advanced Packaging Corp., Bethel, Vt.

Filed Jul. 18, 2000, Appl. No. 618,173
Int. Cl. B65D *83/00*
U.S. Cl. 222—402.15 **10 Claims**



1. A dispensing mechanism for a pressurized container having a sidewall, an axially movable valve, a valve cap and a dispensing nozzle, comprising:

a platform adapted to be removably fitted on the valve cap,

a lever,

said platform having a front portion, said lever having a front end pivotally mounted to said front portion of said platform,

said lever having an intermediate force transmitting portion adapted to engage the nozzle,

said lever having a rear handle portion, actuation of said handle portion causing said intermediate portion to force the nozzle and the valve on which the nozzle is positioned into a position to cause product to be dispensed from the container,

said platform having a first relatively rigid engaging lip extending below said platform at said front portion of said platform to engage the valve cap, said first lip subtending an arc sufficiently great to provide substantial engagement between said first lip and the valve cap and to resist forces tending to lift said platform from the valve cap when forces are exerted at the pivotal engagement between the front end of said lever and said front end of said platform,

said platform having a second engaging lip spaced from said first engaging lip to stabilize said platform on said cap, said second engaging lip being flexible and covering an arc substantially less than the arc of said first engaging lip in order to permit said platform to be readily placed on and removed from the cap.

US 6,340,104 B1
AUTOMOBILE WINDOW COAT HANGER WITH SUCTION CUPS

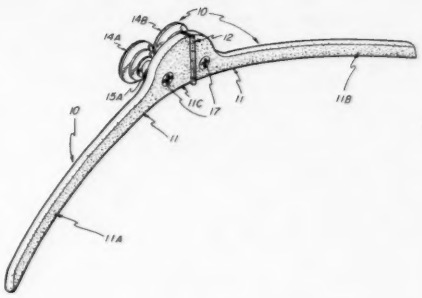
Mike Saylor, 320 Parkway Dr., St. Marys, Ohio 45885

Filed Aug. 1, 2000, Appl. No. 630,670
Int. Cl. A47G *25/14*
U.S. Cl. 223—94 **6 Claims**

1. A hanger for an article of clothing which can be reversibly affixed to a smooth surface such as an automobile window comprising:

a generally contour shape form;

said contour shape form has a central section and two wings;

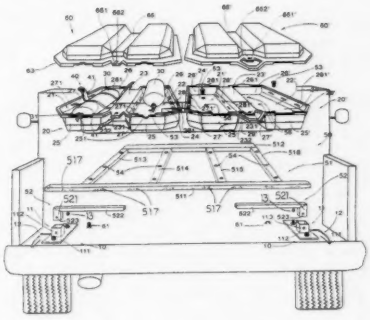


and one or more suction cups are affixed to said central section wherein said central section of said hanger has a single hinge at the midpoint of said central section.

US 6,340,105 B1
PORTABLE CYLINDER CARRIER ARRANGEMENT

James C. Black, 25490 Jim Dr., Moreno Valley, Calif. 92553

Filed Jun. 25, 1999, Appl. No. 344,515
Int. Cl. B60R *9/00*
U.S. Cl. 224—404 **40 Claims**



1. A portable cylinder carrier arrangement for holding at least one gas cylinder to a storing surface for storing or transporting, comprising:

at least a carrier shell forming at least a receiving cavity for holding a gas cylinder therein, a supporter means for storing and transporting said carrier shell by firmly affixing said carrier shell on a storing surface, a restraining means for securing said gas cylinder in position inside said receiving cavity of said carrier shell, a mounting seat for securing said carrier shell to said supporter means;

wherein said carrier shell has a W-shaped cross section that further defines a second receiving cavity aligned in parallel with said receiving cavity for totally receiving two gas cylinders, wherein said carrier shell further comprises a separation wall extended between said two receiving cavities, and that each of said receiving cavities is surrounded by a bottom wall, a front wall, a rear wall, and two side walls; and

wherein said carrier shell has a collar notch provided at a top edge of said front wall of each of said receiving cavities so as to enable a cylinder head of said gas cylinder frontwardly extending outside said carrier shell.

US 6,340,106 B1

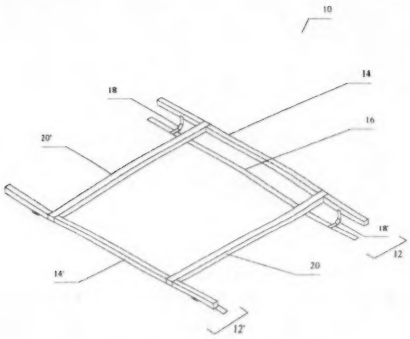
CARRYING RACK FOR TRUCK BEDS

Jason D. Dutton, 2154 Pinebrook Trail, Cuyahoga FAlls, Ohio 44223

Continuation-in-part of application No. 09/190,879, filed on Nov. 12, 1998, now abandoned. This application Mar. 20, 2000, Appl. No. 528,323.

Int. Cl. B60R *9/00*

U.S. Cl. 224—405 **16 Claims**



1. A carrying rack for a truck bed having upstanding lateral side walls comprising:

first and second longitudinal arms extending along a substantial length of said truck bed;

first and second bed-lip sealing members which are configured for attachment to the truck bed lateral side;

a plurality of extension arms associated with each of said longitudinal arms and bed-lip sealing members, each extension arm being attached at a first end to one of the longitudinal arms, and at a second end to one of said bed-lip sealing members in a manner so as to secure each said longitudinal arm outboard of and at a spaced apart distance above said lateral side walls;

means for attaching each of said bed-lip sealing members to the truck bed lateral side;

at least one cross member releasably attached between said longitudinal arms; and,

at least one equipment mount releasably attached to said at least one cross member.

US 6,340,107 B1

AUTOMATIC MOTOR VEHICLE ASSEMBLY AND WELDING STATION

Sergio Cappa, and Antonio Recupero, both of Turin, Italy, assignors to Advanced Technologies S.r.l., Pianezza, Italy

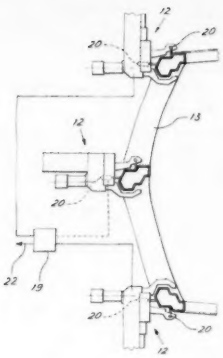
Filed Oct. 24, 2000, Appl. No. 694,284

Claims priority, application Italy, Oct. 25, 1999, MI99A2224

Int. Cl. B23K *37/04;* **B23Q** *15/14;15/22;* **B23P** *21/00*

U.S. Cl. 228—4.1 **8 Claims**

1. Motor vehicle body assembly and welding station comprising a pair of facing tool support conformators designed to work on a body and take the body between the conformators by a conveyor system with the conformators being movable between a rest position in which the body is free to enter and exit the station and a work position in which the tools are near the body characterized in that at least some of the tools comprise measurement means for a relative position of facing body parts and that the conformators have an intermediate position between said work and rest positions with control means taking the conformator into said intermediate



position and activating the measurement means to determine an agreement of body dimensions with predetermined measurement intervals and issue acceptance or rejection signals for the body.

US 6,340,108 B1

HOT ROLLING METHOD AND EQUIPMENT

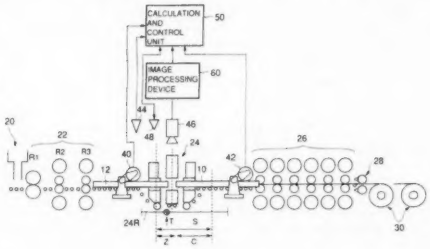
Shigeru Isoyama, Chiba; Takeshi Hirabayashi, Chiyoda-ku; Takahiro Yamasaki; Takushi Kagawa, both of Chiba; Kazunori Nagai, Hiroshima; Naohiko Ishibashi, Hiroshima, and Takashi Okai, Hiroshima, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, and Mitsubishi Heavy Industries, LTD, Tokyo, both of Japan

PCT No. PCT/JP99/03314, § 371 Date Aug. 28, 2000, § 102(e) Date Aug. 28, 2000, PCT Pub. No. WO00/78474, PCT Pub. Date Dec. 28, 2000

PCT Filed Jun. 22, 1999, Appl. No. 623,086

Int. Cl. B23K *1/00*

U.S. Cl. 228—102 **33 Claims**



1. A hot rolling method in which a tail edge of a preceding material and a leading edge of a following material are joined to each other during traveling by a movable joining apparatus after hot rough rolling, and the materials are fed to a finish rolling mill to be rolled, characterized in that

a speed of the following material is controlled according to the position of the tail edge of the preceding material so that a distance between the tail edge of the preceding material and the leading edge of the following material become a desired value,

whereby the tail edge of the preceding material and the leading edge of the following material are joined to each other during traveling.

US 6,340,109 B2
SOLDER BUMP MEASURING METHOD AND APPARATUS

Yutaka Hashimoto, Atsugi; Hideaki Sasaki, Hadano; Mamoru Kobayashi, Hadano, and Shinichi Kazui, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

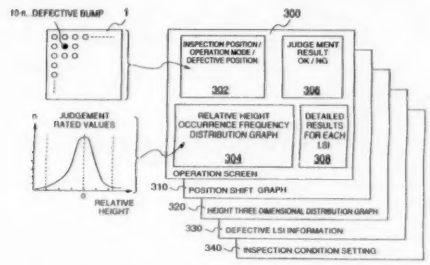
Division of application No. 09/289,386, filed on Apr. 12, 1999, now Pat. No. 6,196,441. This application Jan. 8, 2001, Appl. No. 755,106.

Claims priority, application Japan, Dec. 5, 1995, 7-316283

This patent is subject to a terminal disclaimer.

Int. Cl. B23K *31/12;15/00*

U.S. Cl. 228—103 **4 Claims**



1. A method of measuring solder bumps formed on a work to be measured, comprising the steps of

irradiating a light beam on each solder bump disposed on the work set on a table;

measuring an apex height of each solder bump by receiving a light reflected from each solder bump;

determining a regression plane constituted by said solder bumps by referring to said apex heights measured; and

determining a relative apex height of each solder bump relative to said determined regression plane.

US 6,340,110 B1
METHOD AND APPARATUS FOR SOLDERING PRINTED CIRCUIT BOARDS AND COOLING MECHANISM FOR A SOLDERING APPARATUS

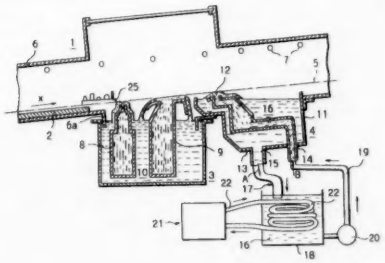
Hideki Nakamura, Koshigaya, and Shohei Mawatari, Soka, both of Japan, assignors to Senju Metal Industry Co., Ltd., Tokyo, Japan

Filed Feb. 18, 2000, Appl. No. 506,601

Claims priority, application Japan, Feb. 22, 1999, 11-043086

Int. Cl. B23K *31/02*

U.S. Cl. 228—179.1 **19 Claims**



1. A method for soldering a printed circuit board comprising applying molten solder to a printed circuit board by contacting the printed circuit board to adhere solder to the printed circuit board and then contacting the solder applied to the printed circuit board with a flowing stream of cooling liquid before the solder has completely solidified to cool the solder, the solder forming soldered joints upon solidification.

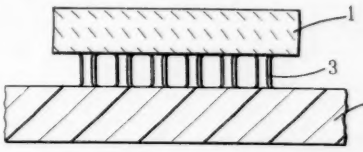
US 6,340,111 B1
MICRO GRID ARRAY SOLDER INTERCONNECTION STRUCTURE FOR SECOND LEVEL PACKAGING JOINING A MODULE AND A PRINTED CIRCUIT BOARD

Allen Thomas Mays; Kris Allan Slesinger, both of Charlotte, and Michael Camillo Weller, Harrisburg, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of application No. 09/035,538, filed on Mar. 5, 1998, now Pat. No. 6,059,173. This application Feb. 2, 2000, Appl. No. 496,431.

Int. Cl. B23K *31/02;35/04*

U.S. Cl. 228—180.22 **11 Claims**



1. A method for interconnecting a second level packaging of an electronic array module to a printed circuit board or card which comprises attaching said module to said board or card by providing a plurality of solder interconnections extending from solder wettable pads on a major surface of said module to a corresponding set of solder wettable pads of said board or card in a micro area grid array having a pitch of about 0.75 mm or less and wherein said solder interconnections are column shaped with the height of each being at least about 1.4 times its diameter;

wherein said connections are about 9 mils to about 13 mils in diameter and about 12.5 mils to about 33 mils in height.

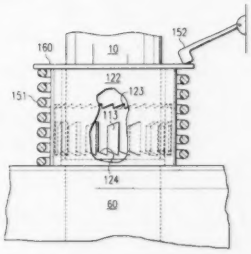
US 6,340,112 B1
STEPWISE AUTOROTATION OF WIRE BONDING CAPILLIARY

Sreenivasan K. Koduri, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of application No. 08/992,270, filed on Dec. 17, 1997, now Pat. No. 5,996,877, Provisional application No. 60/033,483, filed on Dec. 19, 1996. This application Jul. 30, 1999, Appl. No. 363,849.

Int. Cl. B23K *31/02;37/00*

U.S. Cl. 228—180.5 **11 Claims**



10. A method of wire bonding an integrated circuit chip package, the method comprising the steps of:

aligning an axis of a face of a capillary along a first direction;

using the capillary to form a first wire bond at a first bond point on the integrated circuit chip package;

realigning the axis of the capillary face along a second direction;

using the capillary to form a second wire bond at a second bond point on the integrated circuit chip package.

US 6,340,113 B1

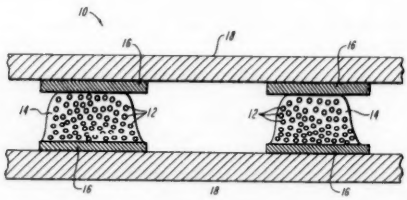
SOLDERING METHODS AND COMPOSITIONS

Donald H. Avery, 6325 NE. Barrett Dr., Poulsbo, Wash. 98370, and John P. Ranieri, 2719 Wooldridge Dr., Austin, Tex. 78703

Division of application No. 08/726,194, filed on Oct. 4, 1996, now abandoned, Provisional application No. 60/004,998, filed on Oct. 10, 1995, Provisional application No. 60/004,885, filed on Oct. 6, 1995, Provisional application No. 60/005,034, filed on Oct. 6, 1995. This application Jan. 8, 1999, Appl. No. 226,942.

Int. Cl. B23K *31/00*

U.S. Cl. 228—248.5 **11 Claims**



1. A method of forming a compliant, porous failure-resistant joint between two opposed surfaces comprising the steps of:

applying a solder composition to at least one of said opposed surfaces, said solder composition comprising a plurality of bimetallic particles having a first core metal and a second coating metal, wherein a combination of the first and second metals has a lower melting point than either of the first and second metals alone,

raising said particles to a temperature just above the melting point of the combination of the first and second metals, such that the second coating metal dissolves into the first core metal, and

controlling the maximum temperature above the melting point of said combination of first and second metals to thereby form a compliant, porous failure-resistant joint that has an average pore size of from about 1 micrometer to about 1000 micrometers and that resists flowing or slumping.

US 6,340,114 B1

IMAGING ENGINE AND METHOD FOR CODE READERS

Mark Correa, Lake Grove; Rubin Gelles, New York; Duanfeng He, Farmingville; Eugene Joseph, Coram; Yajun Li, Oakdale; Mehul Patel, Fort Salonga, and Thomas M. Stankelis, Islip, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

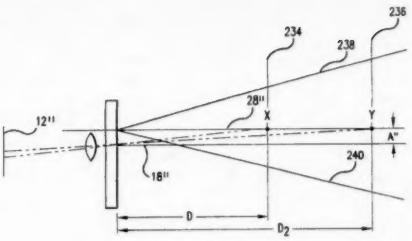
Filed Jun. 12, 1998, Appl. No. 96,578

Int. Cl. G02B *26/08;* **G06K** *7/10*

U.S. Cl. 235—462.22 **52 Claims**

44. A target illumination source for a handheld optical code reader comprising:

means for producing a broad beam of low output intensity to illuminate a target barcode close to the optical code reader; and



means for producing a narrower beam of higher output intensity to illuminate a target barcode far from the optical code reader.

US 6,340,115 B1

CARD READER AND METHOD FOR COMPLETING TRANSACTIONS

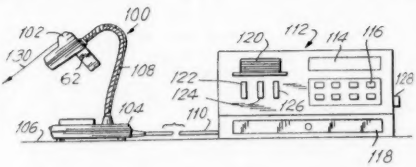
Jerome Swartz, Old Field, N.Y., assignor to Symbol Technologies, Inc., Holtsville, N.Y.

Division of application No. 08/969,005, filed on Nov. 12, 1997, which is a continuation of application No. 08/679,310, filed on Jul. 12, 1996, now abandoned, which is a division of application No. 08/400,840, filed on Mar. 8, 1995, now abandoned, which is a continuation of application No. 08/292,584, filed on Aug. 18, 1994, now Pat. No. 5,448,046, which is a continuation-in-part of application No. 07/921,414, filed on Jul. 27, 1992, now abandoned, which is a continuation of application No. 07/553,559, filed on Jul. 16, 1990, now abandoned, which is a continuation-in-part of application No. 07/392,207, filed on Aug. 10, 1989, now abandoned, which is a continuation-in-part of application No. 07/138,563, filed on Dec. 28, 1987, now Pat. No. 4,871,904. This application May 11, 1999, Appl. No. 309,810.

This patent is subject to a terminal disclaimer.

Int. Cl. G06K *7/10*

U.S. Cl. 235—462.45 **18 Claims**



14. An arrangement for processing transactions, comprising:

a) a data base in which transaction attribute price information for each of the transactions is stored;

b) a hand-held, electro-optical reader aimable at a remotely located bar code symbol having parts of different light reflectivity, associated with a selected transaction to be identified, and manually triggerable for electro-optically reading the symbol by automatically repetitively sweeping a light beam in a scan plane across the symbol, by detecting light reflected from the symbol, and by generating an electrical signal corresponding to the detected light;

c) an interrogator for automatically transmitting the electrical signal and interrogating the data base on a real time basis for the attribute price information of the identified transaction, and for retrieving the attribute price information on a real time basis for the identified transaction;

d) a card reading device slot for receiving a card to complete the identified transaction by charging a customer's account for a payment based on the retrieved attribute price information, said card reading device slot being provided on the hand-held electro-optical reader; and

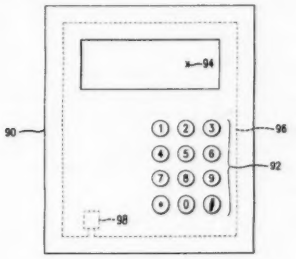
e) a printer on the reader for printing a printed memorandum of the transaction.

US 6,340,116 B1

PROXIMITY CARD WITH INCORPORATED PIN CODE PROTECTION

Kenneth B. Cecil, 3184 Sage Glen, Escondido, Calif. 92024, and Charles A. Walton, 19115 Overlook Rd., Los Gatos, Calif. 95030

Filed Sep. 16, 1999, Appl. No. 397,269
Int. Cl. G06K *19/06*
U.S. Cl. 235—492 **36 Claims**



1. An electronic identification system for transmitting identification data from a proximity device to a reader, comprising in combination:

a data source in said proximity device;

a data receiver in said reader;

said proximity device and said reader coupled by proximity antenna means to each other;

means for entering personal identification numbers into said proximity device;

first comparison means within said proximity device to compare said personal identification numbers with first reference identification numbers stored in said proximity device;

means to enable data transmission of additional data from said proximity device to said data receiver on said comparison means showing equality in said personal identification numbers and said stored reference identification numbers; and

means to inhibit data transmission if said comparison means shows inequality of said personal identification numbers and said stored reference identification numbers.

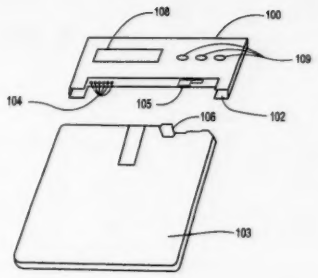
US 6,340,117 B1

APPARATUS AND METHOD FOR TRANSFERRING INFORMATION BETWEEN A REMOVABLE MEMORY AND A COMPUTER

Raymund Eisele, Idstein; Axel Burkart, Utting, both of Germany; Paul Barrett, Surrey, United Kingdom; Andrew Ryan, Brighton, United Kingdom; Peter Holy, Poynings, United Kingdom, and Shaun Tantony, Brighton, United Kingdom, assignors to SmartDisk Corporation, Naples, Fla.

Division of application No. 09/333,997, filed on Jun. 16, 1999, which is a continuation of application No. 08/867,496, filed on Jun. 2, 1997, now Pat. No. 6,089,459, which is a continuation-in-part of application No. 08/514,382, filed on Aug. 11, 1995, now Pat. No. 6,042,009, which is a continuation-in-part of application No. 08/170,166, filed on Apr. 19, 1994, now Pat. No. 5,584,043, Provisional application No. 60/036,672, filed on Mar. 11, 1997. This application Feb. 24, 2000, Appl. No. 512,328.
Int. Cl. G06K *19/06; 5/00*
U.S. Cl. 235—492 **46 Claims**

1. For use with a computer having a magnetic media receiving station and a processing system for executing an operating system program for controlling said magnetic media, wherein a magnetic media emulating data transfer device may be inserted into a magnetic media receiving station of said computer, said data transfer device having a frame that can be inserted into a magnetic media reading station of said computer and including a solid state memory, digital processing circuitry, and an interface for transferring data to said computer via said magnetic media receiving station, a method for controlling the accessing of information from said solid state memory comprising the steps of:



responding to a call from the computer magnetic media operating system for accessing an identified sector of a magnetic media and generating a request to access the solid state memory;

processing information indicative of said identified sector to convert said information indicative of an identified sector to access into block information; and

generating solid state memory address information using said block information.

US 6,340,118 B1

EXCLUSIVE OR CROSS-COUPLED FRAMING CODES FOR SELF-CLOCKING GLYPHS

David L. Hecht, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1999, Appl. No. 464,934
Int. Cl. G06K *19/06*
U.S. Cl. 235—494 **4 Claims**

1. A method for encoding two-dimensional framing codes, comprising the steps of:

establishing first and second code line bit sequences;

determining the exclusive OR (XOR) logic values of said first and second code lines to obtain a two-dimensional matrix of XOR logic values; and

determining said two-dimensional frame codes using said matrix of XOR logic values.

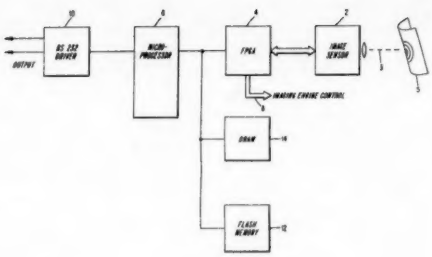
US 6,340,119 B2

TECHNIQUES FOR READING TWO DIMENSIONAL CODE, INCLUDING MAXICODE

Duanfeng He, Farmingville, N.Y.; Kevin Hunter, Fort Myers, Fla., and Eugene Joseph, Coram, N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Division of application No. 09/594,093, filed on Jun. 15, 2000, now Pat. No. 6,234,397, which is a division of application No. 09/176,894, filed on Oct. 22, 1998, now Pat. No. 6,088,482. This application Mar. 26, 2001, Appl. No. 816,173.
Int. Cl. G06K *19/06*
U.S. Cl. 235—494 **4 Claims**

1. A method for associating pixel data in a pixel plane, obtained by an optical code reader from an image of a two dimensional grid-based symbol, with corresponding modules in the grid, comprising the steps of:

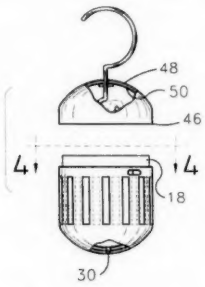


identifying subsets of the pixel data having a known association with plural seed modules;

determining the coefficients of a mathematical transform using the identified association between the pixel data subsets and the seed modules; and

using the mathematical transform to perform a two-dimensional mapping to associate other locations in the pixel plane with additional symbol modules.

US 6,340,120 B1
SCENT DISPENSING DEVICE
David K. Seymour, 609 Country Club Dr., Newark, Ohio 43055
Filed Jan. 14, 2000, Appl. No. 484,463
Int. Cl. A61L *9/04*
U.S. Cl. 239—59 **13 Claims**



1. A scent dispensing device, said device comprising:

a container, said container comprising:

a base portion;

a cover portion for covering said base portion, said cover portion having a peripheral wall integrally coupled to a top wall, said peripheral wall having a peripheral edge;

a first hanging means for hanging said container, said first hanging means being fixedly coupled to an exterior surface of said top wall;

said base portion having a peripheral wall and a bottom wall, said peripheral wall having a lip thereon, said lip having a size and a shape adapted to fit in said cover such that said lip may be releasably coupled in said cover;

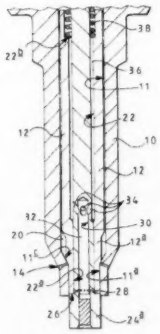
a plurality of slots for releasing said scent, said slots extending through said peripheral wall of said bottom portion;

an inner peripheral wall positioned in said base portion and having dimensions adapted to abut said inner peripheral wall against an inner surface of said peripheral wall of said base portion, said inner peripheral wall having slots therethrough, each of said slots in said inner peripheral wall being located to coincide with one of said slots in said peripheral wall of said base portion, said inner peripheral wall being rotatably mounted in said bottom portion for selectively opening and closing said slots.

a first hook having a first end and a second end, said first end of said first hook being fixedly coupled to said top wall such that said second end extends away from said top wall; and

a second hook having a first end and a second end, said first end of said second hook being fixedly coupled to said first end of said first hook, said second end of said second hook extending into an interior of said container for hanging a scented material in the interior of said container.

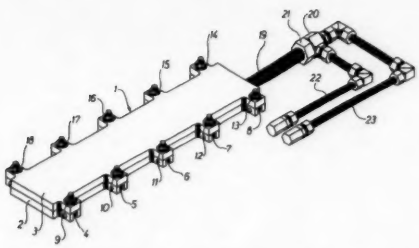
US 6,340,121 B1
FUEL INJECTOR
Malcolm David Dick Lambert, Bromley, United Kingdom, assignor to Delphi Technologies, Inc., Troy, Mich.
Filed Sep. 15, 2000, Appl. No. 662,616
Claims priority, application United Kingdom, Sep. 23, 1999, 9922408
Int. Cl. F02M *61/06*
U.S. Cl. 239—533.4 **17 Claims**



1. A fuel injector comprising a nozzle body defining a first bore and an inwardly opening valve member slidable within the first bore, the valve member being engageable with a first seating to control fuel delivery through a first outlet opening provided in the nozzle body, the valve member being provided with a second bore within which an outwardly opening valve needle is slidable, the valve needle being engageable with a second seating to control fuel delivery through a second outlet opening provided in the valve needle, the fuel injector comprising first and second control chambers for fuel, whereby fuel pressure within the first and second control chambers controls movement of the valve member and the valve needle away from their respective seatings so as to permit fuel delivery through a selected outlet opening.

US 6,340,122 B1
SPREADER FOR SPREADING A FLUID, SUCH AS AN ADHESIVE
Jørgen Kamstrup-Larsen, Allerød, Denmark, assignor to Casco A/S, Fredensborg, Denmark
PCT No. PCT/DK99/00335, § 371 Date Dec. 18, 2000, § 102(e) Date Dec. 18, 2000, PCT Pub. No. WO99/65612, PCT Pub. Date Dec. 23, 1999
PCT Filed Jun. 18, 1999, Appl. No. 719,540
Claims priority, application Denmark, Jun. 18, 1998, 1998 00825
Int. Cl. B05B *1/14*
U.S. Cl. 239—548 **12 Claims**

1. A spreader (**1**) for spreading a fluid, such as an adhesive, in a thin layer on a surface, said spreader comprising an oblong spreader housing (**2**, **3**; **52**, **53**) and a plurality of outlet nozzles (**36**, **67**) which are arranged at regular intervals along one side of the spreader housing (**2**, **3**; **52**, **53**), and which are connected to a



feeding channel system (**34**, **64**) accommodated in the housing and in turn connected to an inlet opening (**35**, **65**) for said fluid, characterised in that the nozzles (**36**, **67**), their feeding channel system (**34**, **64**) and the inlet opening (**35**, **65**) are shaped in a separate lining (**32**, **33**; **62**, **63**), detachably secured in the housing (**2**, **3**; **52**,**53**), whereby the housing (**2**, **3**; **52**, **53**) comprises cavities receiving the lining (**32**, **33**; **62**, **63**) and being adapted to fixedly clamp around said lining (**32**, **33**; **62**, **63**) during the use of the spreader, at least one opening (**47**, **71**) being provided in said housing (**2**, **3**; **52**, **53**), where the nozzles (**36**, **65**) project from the interior of the housing (**2**, **3**; **52**, **53**) through said opening.

US 6,340,123 B1

UNIVERSAL FLOW CHANNEL

Ching-Chin Lee, 7678 Oxgate Ct., Hudson, Ohio 44236; Gary Robert Burg, 3205 Waterford Ave., NW. Canton, Ohio 44708; Ernest Wilford Looman, Jr., 664 Clark Dr., Tallmadge, Ohio 44278; Bruce Joseph Turner, 275 Summit St., and Malcolm George Marshall, 122 Apple Dr., both of Wadsworth, Ohio 44281

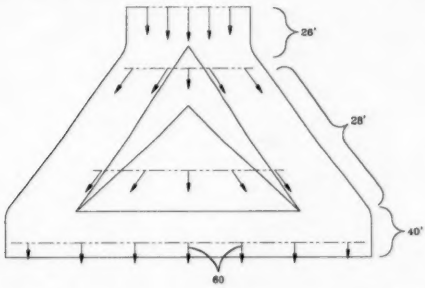
PCT No. PCT/US97/20054, § 371 Date Mar. 30, 2000, § 102(e) Date Mar. 30, 2000, PCT Pub. No. WO99/22927, PCT Pub. Date May 14, 1999

PCT Filed Oct. 31, 1997, Appl. No. 424,677

Claims priority, application U.S., Oct. 31, 1997, PCT/US97/20054

Int. Cl. B05B *1/14*

U.S. Cl. 239—552 **26 Claims**



1. Apparatus for directing the flow of polymeric material from a supply source to one or more shaping dies, the apparatus having a flow channel therein, the flow channel having an inlet communicating with a supply orifice for receiving the material, the flow channel being defined by opposite side walls, an upper wall, and a lower wall, the flow channel including a downstream region having a first zone in flow communication with the inlet, and a second zone in flow communication with the first zone, the first and second zones being associated with a common centerline, the side walls of the second zone diverging in opposite lateral directions generally symmetrically about the centerline and associated with an angle, α, the apparatus being characterized by:

a substantially triangular flow directing insert located within the second zone positioned adjacent to the lower wall, the flow directing insert having sloped side surfaces intersecting a generally planar top surface, the top surface being spaced from the upper wall in the second zone.

US 6,340,124 B1

HOUSEHOLD ELECTRIC COOKING APPLIANCE, SUCH AS A FOOD PROCESSOR, COMPRISING A SIMPLIFIED LOCKING AND UNLOCKING DEVICE

Patrick Charles, Louey; Robert Smit, Lourdes; Jean-Luc Bordes, Ade; Pierre Bineau, Asson; Philippe Gaudez, Lyons, and Manuel Jurado, Lons, all of France, assignors to SEB S.A., Ecully, France

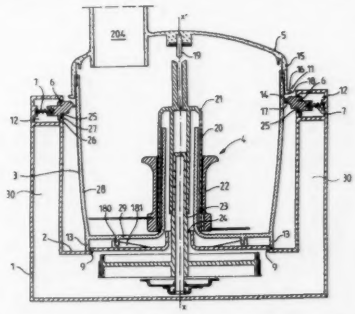
PCT No. PCT/FR98/02115, § 371 Date Apr. 3, 2000, § 102(e) Date Apr. 3, 2000, PCT Pub. No. WO99/17647, PCT Pub. Date Apr. 15, 1999

PCT Filed Oct. 2, 1998, Appl. No. 509,894

Claims priority, application France, Oct. 3, 1997, 97 12566; Oct. 3, 1997, 97 12569

Int. Cl. B02C *25/00;* **D47J** *43/046*

U.S. Cl. 241—37.5 **20 Claims**



1. Electrical household appliance for culinary preparation, of the food processor type having a body (**1**) forming a base (**2**) provided to receive a working receptacle (**3**) in which can be disposed a rotatable working element (**4**) driven by a motor disposed in the body (**1**), a lid (**5**) provided to close the working receptacle (**3**)**1** and means for locking the lid (**5**) on the working receptacle (**3**) disposed on the base (**2**), characterized in that:

the locking means have at least two jaws (**6**; **106**) movably mounted on the body (**1**) between a locking position in which they engage the lid (**5**) to block it vertically and an unlocking position in which the lid (**5**) can be withdrawn, these jaws being movable against at least one restoring means (**7**) toward one of the two positions,

and in that the appliance has unlocking means (**35**; **175**) movably mounted on the body between a rest position in which the jaws (**6**; **106**) are able to lock the lid (**5**) on the receptacle (**3**), and an active position in which the jaws (**6**; **106**) are brought into their unlocking position.

US 6,340,125 B1

APPARATUS FOR BREAKING CHIPS AND SYSTEM FOR TREATING CHIPS

Shintaro Murata, Nagoya; Tatsuyuki Honda, Nishio; Toshihiro Kondo, and Teruki Kamimura, both of Okazaki, all of Japan, assignors to Fuji Machine Mfg. Co., Ltd., and Techno21Group Corporation, both of Aichi-ken, Japan

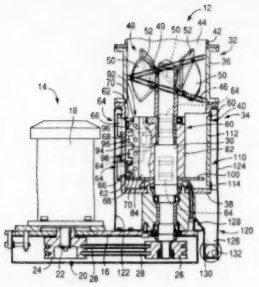
Filed Jul. 23, 1999, Appl. No. 359,738

Claims priority, application Japan, Sep. 3, 1998, 10-249903

Int. Cl. B02B *1/00;* **B02C** *11/08;* **B07B** *11/00*

U.S. Cl. 241—47 **23 Claims**

1. An apparatus for breaking metallic chips produced by cutting metallic workpieces, with a machine tool, into fragments, comprising:



an outer structure;

an inner structure which is provided inside the outer structure such that the inner structure is concentric with the outer structure;

a rotary drive device which rotates, in a rotating direction, at least one of the inner and outers structures relative to the other of the inner and outer structures, about a common centerline of the inner and outer structures;

then outer structure including a cylindrical portion, and an outer breaking portion which projects from an inner circumferential surface of the cylindrical portion; and

the inner structure including an inner breaking portion which cooperates with the outer breaking portion to define a gap therebetween whose width cannot cause the chips to be sheared by the inner and outer breaking portions,

wherein at least one of the outer breaking portion and the inner breaking portion comprises a plurality of breaking blocks each one of which is detachably attachable independent of the other breaking block or blocks,

wherein the plurality of breaking blocks are provided along a line which inclined relative to a reference direction parallel to said common centerline, and

wherein the outer breaking portion comprises the plurality of breaking blocks, and the cylindrical portion of the outer structure has a plurality of through-holes which are formed through a thickness of the cylindrical portion, and wherein the breaking blocks are externally fitted in the through-holes, respectively, and thereby fixed to an outer circumferential surface of the cylindrical portion.

2. An apparatus for breaking metallic chips produced by cutting metallic workpieces, with a machine tool, into fragments, comprising:

an outer structure;

an inner structure which is provided inside the outer structure such that the inner structure is concentric with the outer structure;

a rotary drive device which rotates, in a rotating direction, at least one of the inner and outer structures relative to the other of the inner and outer structures, about a common centerline of the inner and outer structures;

the outer structure including a cylindrical portion, and an outer breaking portion which projects from an inner circumferential surface of the cylindrical portion; and

the inner structure including an inner breaking portion which cooperates with the outer breaking portion to define a gap therebetween whose width cannot cause the chips to be sheared by the inner and outer breaking portions,

wherein the outer structure further includes an outer spiral blade portion which spirally projects from an upper portion of the inner circumferential surface of the cylindrical portion, and the outer breaking portion of the outer structure projects from a lower portion of the inner surface of the cylindrical portion, wherein the inner structure further includes a central portion which is concentric with the cylindrical portion of the outer structure, and an inner spiral blade portion which extends radially from an outer circumferential surface of the central portion to a position in vicinity of the outer spiral blade portion, the inner spiral blade portion cooperates with the outer spiral blade portion to break the chips, and the inner breaking portion projects radially from the central portion below the inner spiral blade portion, and wherein the outer and inner spiral blade portions cooperate with each other to provide a first-stage breaking device which breaks a plurality of elongate chips which are entangled in each other, while untangling the entangled elongate chips, and the outer and inner breaking portions cooperate with each other to provide a second-stage breaking device which further breaks the chips broken by the first-stage breaking device, into the fragments.

US 6,340,126 B1

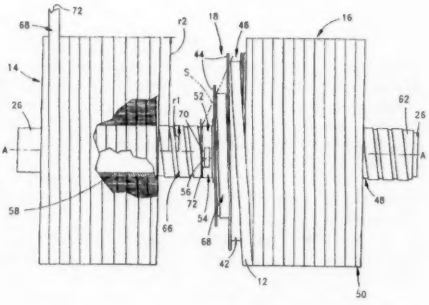
DEVICES AND METHODS FOR UNWINDING ELONGATE MATERIALS

Warren Welborn McAlpine; Stephen Owen Mast; David Henry Smith, all of Hickory, N.C., and Joseph Varga, Woodbridge, Canada, assignors to Corning Cable Systems LLC, Hickory, N.C.

Filed Nov. 30, 1999, Appl. No. 451,379

Int. Cl. B65H *16/00;18/08;18/28*

U.S. Cl. 242—160.2 **34 Claims**



1. A package having a length of elongate material wound about a core of the package, comprising:

a primary core portion and an extended core portion contiguous with the primary core portion, the extended core portion extending beyond a radial side of the package; and,

the length of elongate material defining a body portion and a tail portion, the body portion being wound about the primary core portion, the tail portion being contiguous to the body portion and helically wound about the extended core portion so that sections of the tail do not overlap, the length of the body portion elongated material being greater than the length of the tail portion of the elongate material.

US 6,340,127 B1

HARMONIC REDUCTION GEAR AND SAFETY BELT APPARATUS IN MOTOR VEHICLES COMPRISING A HARMONIC REDUCTION GEAR OF THIS KIND

Robert Kopetzky, Lonsee, Austria, and Thomas Kempfle, Bibertal, Germany, assignors to Takata (Europe) Vehicle Safety Technology GmbH, Ulm, Germany

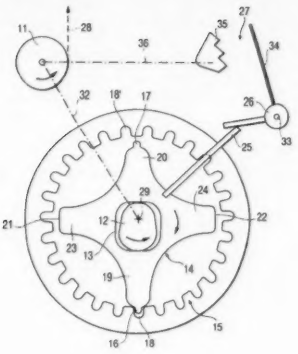
Filed Oct. 29, 1999, Appl. No. 428,985

Claims priority, application Germany, Oct. 29, 1998, 198 49 987

Int. Cl. B60R *22/415;* **F16H** *1/28*

U.S. Cl. 242—382.2 **11 Claims**

1. A harmonic reduction gear comprising:



a rotatable eccenter;

a cross-shaped outer toothed member having a plurality of outer teeth and including an opening for receiving the eccenter;

a ring fixed to a housing and having inner teeth postioned to engage the outer teeth;

wherein the outer teeth alternately engage the inner teeth during rotation of the eccenter.

US 6,340,128 B1

DEVICE FOR COMPENSATING A TENSILE YARN FORCE SENSOR

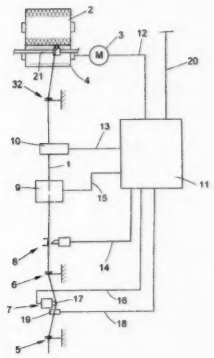
Franz-Josef Flamm, Stolberg, and Christian Sturm, Krefeld, both of Germany, assignors to W. Schlafhorst AG & Co., Germany

Filed Aug. 25, 2000, Appl. No. 648,583

Claims priority, application Germany, Aug. 25, 1999, 199 40 161

Int. Cl. B65H *59/38;54/71*

U.S. Cl. 242—413.5 **4 Claims**



1. A device for compensating a tensile yarn force sensor having a measuring member for detecting the tensile force of a traveling yarn during winding onto a cheese at a work station of a multi-station textile machine, wherein the yarn travels in a disposition exerting a measurable pressure on the measuring member, the device comprising a control device operable at predetermined times for actuating a cutting of the yarn and actuating a zero compensation at the measuring member thereby relieved of the pressure exerted thereon by the yarn.

US 6,340,129 B1

METHOD FOR OPERATING A WORKSTATION OF A CHEESE-PRODUCING TEXTILE MACHINE

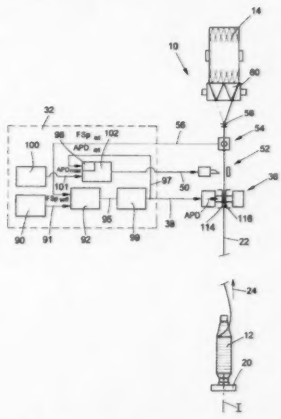
Rolf Haasen, Mönchengladbach; Hans-Günter Wedershoven, Nettetal, and Bernd-Rüdiger Theele, Aachen, all of Germany, assignors to W. Schlafhorst AG & Co., Germany

Filed Feb. 9, 2000, Appl. No. 501,463

Claims priority, application Germany, Feb. 12, 1999, 199 05 860

Int. Cl. B65H *23/24;59/20*

U.S. Cl. 242—419.1 **8 Claims**



1. A method for operating a work station of a textile machine for producing cross-wound bobbins which comprises a tensile yarn force sensor connected to a work station computer for monitoring the tensile yarn force of a yarn traveling from a supply bobbin to a takeup bobbin, and a yarn tensioner having a yarn braking device for regulating the tensile yarn force, the method comprising executing via the work station computer the steps of predetermining a contact pressure of the yarn braking device of the yarn tensioner acting on the yarn according to the tensile yarn force ascertained by the tensile yarn force sensor, comparing the predetermined contact pressure with a predetermined limit value for the contact pressure, and interrupting the bobbin winding process if the limit value is attained or exceeded for a predetermined time period.

US 6,340,130 B2

APPARATUS AND METHOD FOR SUPPLYING FOILS

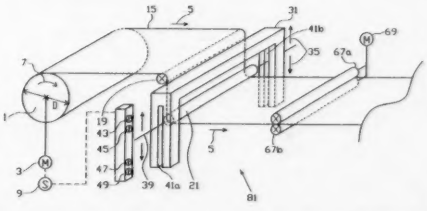
Hans-Peter Wild, Zug, Switzerland, and Eberhard Kraft, Neckarbischofsheim, Germany, assignors to INDAG GmbH & Co. Betriebs-KG, Germany

Filed May 24, 1999, Appl. No. 316,999

Claims priority, application Germany, Jun. 3, 1998, 198 24 798

Int. Cl. B65H *23/185*

U.S. Cl. 242—420.6 **21 Claims**



1. A foil supply apparatus for supplying foil material producing foil bags, comprising at least two motor-driven supply rolls each

for supplying foil material with a supply capacity, a withdrawal means for withdrawing the respective foil material from the respective supply roll with a withdrawal capacity, and a respective consumption sensor arranged between the supply rolls and the withdrawal means, with the help of which the drive of the respective supply roll is controlled in dependency of the consumption of foil material wherein said foil materials are brought together downstream of said respective consumption sensors to seal said foil materials to each other, said consumption sensors each comprising:

at least one stationary deflection roller configured to make rolling contact with the foil material,

at least one movable sensor roller positioned a spacing distance from the at least one deflection roller, the sensor roller being configured to make rolling contact with the foil material and being movable under the force of gravity in a substantially vertical direction with respect to the stationary deflection roller such that the spacing distance changes in accordance with the difference between the supply capacity and the withdrawal capacity of the foil material and slack in the foil material is removed,

a sensor means which senses the spacing distance and increases the speed of the drive of the respective supply roll when the spacing distance is smaller than a respective first predetermined distance, and which reduces the speed of the respective drive when a respective second predetermined distance is exceeded,

a guide means along which the at least one sensor roller moves while the spacing distance is changed, the guide means being oriented in at least a substantially vertical orientation,

a first signal for accelerating the drive when the spacing distance is smaller than the first predetermined distance, and

a second signal for slowing but not stopping the drive when the spacing distance exceeds the second predetermined distance.

US 6,340,131 B1

METHOD FOR OPERATING AN AUTOMATIC CHEESE WINDER WHEN CHANGING BATCHES

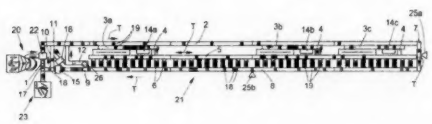
Manfred Mund, Herzogenrath; Michael Haines, Nettetal; Michael Iding, Geldern; Torsten Forche; Stefan Terorde, both of Hamminkeln/Dingden; Bernd-Rudiger Theele, Aachen; John-Adrian Holt, Monchengladbach, and Heinz-Peter Lindemann, Willich, all of Germany, assignors to W. Schlafhorst AG & Co., Germany

Filed Nov. 23, 1999, Appl. No. 447,495

Claims priority, application Germany, Nov. 25, 1998, 198 54 375

Int. Cl. B65H *67/02*

U.S. Cl. 242—474 **12 Claims**



1. A method for performing a batch change in an automatic cheese winder having multiple identical winding stations arranged in sections and a transportation system for supplying to the winding stations spinning cops comprised of yarn-wound on cop tubes, and removing from the winding stations empty cop tubes from which the yarn has been unwound, wherein the transportation system has a plurality of transport trays for supporting initially the spinning cops and subsequently the empty tubes and a plurality of transport paths for travel therealong of the transport trays including a storage path having drives extending along the winding stations for storing transiently a sub-plurality of the plurality of transport trays with spinning cops supported thereon and a plurality of winding station transport paths including transverse transport paths each extending from the storage path through a respective winding station, the method comprising:

a) clearing a first batch of spinning cops from the winding stations section by section including, for each section in sequence:

(i) discharging from the section transport trays having spinning cops thereon and removing the spinning cops from the transport trays to create empty transport trays, and

(ii) temporarily retaining the empty transport trays in the winding station transport paths while clearing the first batch of spinning cops from other winding station sections, and

b) filling the automatic cheese winder with a second batch of spinning cops by successively discharging one empty transport tray from each winding station transport path of each winding station section and delivering in place thereof a transport tray supporting a spinning cop of the second batch, thereby for uniformly filling the winding stations of the winding station sections.

US 6,340,132 B1

ELECTRONIC COMPONENT FEEDING DEVICE

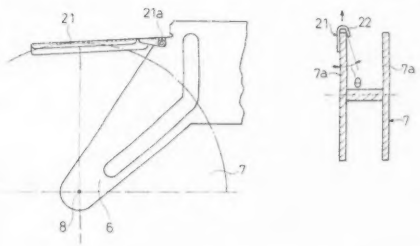
Koji Okawa; Takao Kashiwazaki; Shuichi Kubota; Tadashi Endo; Masato Tanino, all of Yamanashi, and Akira Kabeshita, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 1, 1999, Appl. No. 452,524

Claims priority, application Japan, Dec. 25, 1998, 10-371621

Int. Cl. B65H *23/00*

U.S. Cl. 242—566 **13 Claims**



1. An electronic component feeding device for feeding electronic components carried by a component carrier tape wound around a reel having an outer peripheral edge, the electronic component feeding device comprising:

a reel holder for accepting the reel;

a reel guide movably mounted on the reel holder to move into contact with the outer peripheral edge of the reel;

said reel guide defining a channel for engaging the outer peripheral edge of the reel thereby holding the reel; and

said channel having channel walls opening outwardly at a fixed angle such that a width of said channel increases.

US 6,340,133 B1

SYSTEM TO TRANSFORM A HORIZONTAL TAKE-OFF AND SELF-SUSTAINED HORIZONTAL FLIGHT AIRPLANE INTO SELF-SUSTAINED HORIZONTAL FLIGHT, VERTICAL LANDING AND TAKE-OFF, HYBRID INTEGRATED AIRPLANE

Franco Capanna, Via Quarto Peperino, 30 - 00188 Rome, Italy

PCT No. PCT/IT98/00355, § 371 Date Jun. 12, 2000, § 102(e) Date Jun. 12, 2000, PCT Pub. No. WO99/29570, PCT Pub. Date Jun. 17, 1999

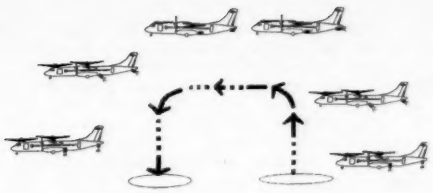
PCT Filed Dec. 9, 1998, Appl. No. 581,312

Claims priority, application Italy, Dec. 10, 1997, RM97A0762

Int. Cl. B64C *27/22*

U.S. Cl. 244—6 **18 Claims**

1. A system for transforming a traditional self-sustained horizontal take-off and landing aircraft with at least one engine for



sustaining horizontal flight into a hybrid, integrated, self-sustained vertical take-off and landing and horizontal flight aircraft, said system comprising:

a hydraulic propulsion system activating at least a blade rotor arranged for vertical take-off and landing and transition to and from horizontal flight, said hydraulic propulsion system being powered by said at least one engine;

a housing in a fuselage of the aircraft for storing said at least a blade rotor during horizontal flight; and

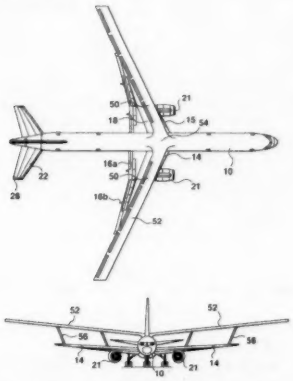
at least one auxiliary engine that is located on one of a lower part of the aircraft fuselage and on an empennage of the aircraft, said at least one auxiliary engine being tiltable between a vertical position and a horizontal position.

US 6,340,134 B1

WING COMBINATION FOR DRAG REDUCTION, AIRCRAFT INCLUDING SUCH A WING, AND A METHOD OF REDUCING THE DRAG OF AN EXISTING AIRCRAFT

Ronald G. Meschino, 8 Bushbury Dr., Don Mills, Canada, M3A 2Z7

Filed Oct. 12, 1999, Appl. No. 415,209
Int. Cl. B64C *3/00*
U.S. Cl. 244—45 R **20 Claims**



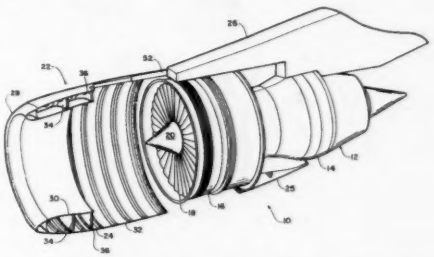
1. An aircraft comprising: a body; a supplementary wing comprising two wing, sections extending outwardly on either side of the body, to provide lift for the body; and a wing support structure for the supplementary wing extending between the body and the supplementary wing, wherein the supplementary wing is configured to reduce induced drag and the supplementary wing by itself has insufficient strength to support the aircraft, wherein the wing support structure comprises a main wing and provides additional strength to withstand loads applied to the supplementary wing by lift forces at least, wherein the main wing extends outwardly from the body spaced from the supplementary wing and the wing support structure includes at least two connections between the main wing and the supplementary wing transferring loads between the supplementary wing and the main wing, wherein the main wing has a low aspect ratio and the supplementary wing has a high aspect ratio, and wherein the main and supplementary wings are configurable to provide the supplementary wing with a higher lift coefficient than the main wing, thereby to provide an overall drag reduction.

US 6,340,135 B1

TRANSLATING INDEPENDENTLY MOUNTED AIR INLET SYSTEM FOR AIRCRAFT TURBOFAN JET ENGINE

Brian E. Barton, Chula Vista, Calif., assignor to Rohr, Inc., Chula Vista, Calif.

Filed May 30, 2000, Appl. No. 580,900
Int. Cl. B64D *29/00*
U.S. Cl. 244—53 B **22 Claims**



1. An aircraft propulsion system arrangement to determinably reduce or eliminate inlet cowl induced bending of an aircraft jet engine case during certain flight conditions, which arrangement comprises a turbofan aircraft jet engine having an engine case with a fan case portion, a nacelle structure housing the engine and having a forward generally cylindrical nacelle portion and a rearward nacelle portion, and a pylon structure to support the engine and the nacelle structure while permitting relative movement between the forward and rearward nacelle portions, wherein the pylon structure supports the forward nacelle portion independently of its support of the engine while permitting translational movement of the forward nacelle portion forwardly on the pylon structure from a locked operational position during operation of the engine to a forward servicing position during non-operation of the engine, wherein the forward nacelle portion provides an air inlet cowl portion directly coupled to said fan case portion of the engine for the supply of air to the engine and to an integral fan housing portion which surrounds the fan case portion of the engine, wherein the forward nacelle portion includes a noselip portion having an inner main skin which extends rearwardly to sealingly engage said fan case portion of the engine, and an outer generally concentric main skin which extends rearwardly to lockingly engage the rearward nacelle portion, and in the forward servicing position of the forward nacelle portion, it may be spaced forwardly from said fan case portion of the engine to uncover the outer fan case portion of the engine to give access thereto and to components mounted thereon which are inaccessible when the forward nacelle portion is secured in the operational position.

US 6,340,136 B1

COMPACT STORING AND RETRIEVING APPARATUS PARTICULARLY USEFUL FOR AIRCRAFT

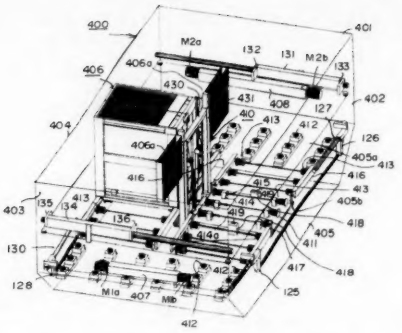
David Luria, Tel Aviv, Israel, assignor to Fuselage Engineering Service, Ltd., Tel Aviv, Israel

Division of application No. 09/232,671, filed on Jan. 19, 1999, now Pat. No. 6,152,287, which is a continuation-in-part of application No. 09/038,962, filed on Mar. 12, 1998, now Pat. No. 6,181,434, which is a continuation-in-part of application No. 08/692,995, filed on Aug. 6, 1996, now abandoned. This application Mar. 23, 2000, Appl. No. 533,249.
Claims priority, application Israel, Aug. 7, 1995, 114861; Japan, Mar. 12, 1997, 9-056774; Mar. 9, 1998, 10-056623
Int. Cl. B64C *1/20*
U.S. Cl. 244—118.1 **6 Claims**

1. An aircraft, comprising:

a cargo compartment for receiving a portable container containing a lift assembly and a plurality of article holders of the same size and external configuration;

a passenger compartment including a galley overlying said cargo compartment and separated therefrom by a deck;



a lift shaft passing through said deck for conveying article holders from said container into the galley in said lift assembly;

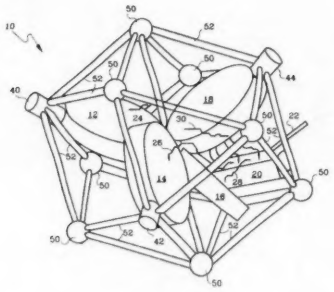
and a guiding element fixed at the mouth of the lift shaft and having an inclined surface engageable with an article holder on the lift assembly for shifting the article holder laterally of the lift assembly to align the article holder with respect to the lift shaft.

US 6,340,137 B1

MOMENT CONTROL UNIT FOR SPACECRAFT ATTITUDE CONTROL

Lawrence P. Davis, and Tristam T. Hyde, both of Phoenix, Ariz., assignors to Honeywell International Inc., Morristown, N.J.

Filed Aug. 26, 1998, Appl. No. 139,989
Int. Cl. B64K *1/28*
U.S. Cl. 244—165 **8 Claims**



1. A momentum control device for positioning a spacecraft comprising:

a plurality of bodies, each operable to spin about separate axes, to produce a plurality of forces;

a unitary structure;

mounting members connected to each spinning body and the unitary structure to provide a unitary combination to receive the forces;

an attachment device comprising a plurality of struts having a predetermined static stiffness and passive damping connected to the unitary combination and adapted to be connected to the spacecraft to attenuate noise transmission from the bodies to the spacecraft and transmit the forces to the craft;

a plurality of sensors operable to produce force signals indicative of the forces in said struts; and

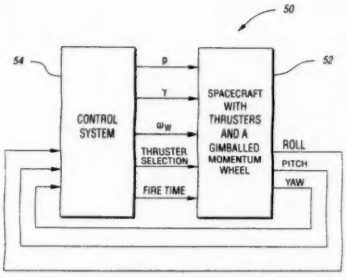
a control system connected to receive the force signals to control the operation of the spinning bodies in controlling the attitude of the spacecraft.

US 6,340,138 B1

STATIONKEEPING METHOD UTILIZING OPEN-LOOP THRUSTER PULSES AND CLOSED-LOOP AUTHORITY LIMITED MOMENTUM STORAGE DEVICES

Michael F. Barsky, Hermosa Beach, Calif.; Thomas M. Tanner, Aurora, Colo.; Loren I. Slafer, Los Angeles, Calif.; Paul D. Williams, San Pedro, Calif.; George B. Semeniuk, San Jose, Calif., and Joseph M. Allard, Chiswick, United Kingdom, assignors to Hughes Electronics Corporation, El Segundo, Calif.

Filed May 8, 2000, Appl. No. 566,571
Int. Cl. B64G *1/28*
U.S. Cl. 244—165 **14 Claims**



1. A method for attitude control of a spacecraft having a set of rigidly attached thrusters and a gimballed momentum wheel, said method comprising:

detecting an error in the orbit of the spacecraft;

selecting at least one thruster to be fired as part of an orbit correction maneuver, and a total maneuver duration T_{tot} for execution of the correction maneuver;

selecting at least one thruster to be fired to level and maintain the rotational speed of the momentum wheel, and a momentum management thruster pulse duration T_j for j=1, 2, . . . n;

dividing the maneuver duration into a sequence of shorter duration open-loop orbit correcting thruster pulses;

generating a combined sequence of the shorter duration open-loop pulses periodically interlaced with a momentum management pulse; and

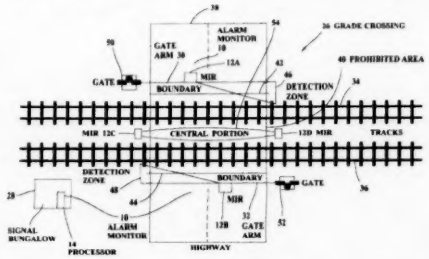
maintaining a closed-loop management over the generation of the momentum management pulses in the combined sequence.

US 6,340,139 B1

HIGHWAY GRADE CROSSING VEHICLE VIOLATION DETECTOR

Thomas N. Hilleary, Chesterfield, Mo., assignor to LaBarge, Inc., St. Louis, Mo.

Filed Jun. 1, 2000, Appl. No. 584,865
Int. Cl. B61L *29/08*
U.S. Cl. 246—292 **18 Claims**



1. An alarm monitor for a railroad grade crossing, the grade crossing including a crossing island and having an island activation

relay that is activated in response to an approaching train, said alarm monitor comprising:

a micropower impulse radar (MIR) responsive to pedestrians and motor vehicles in a prohibited area of the crossing island during activations of the island activation relay;

a processor configured to generate a warning signal when the MIR detects a pedestrian or a motor vehicle in the prohibited area during an activation of the island activation relay; and

a counter configured to count detections of pedestrians and vehicles within the pedestrian area while the island activation relay is activated.

US 6,340,140 B1

RAILROAD FROG FOR SWITCH POINTS AND CROSSINGS

Oswald Lochschmidt, Theodor-Storm-Strasse 4, 51429 Bergisch Gladbach 1, Germany

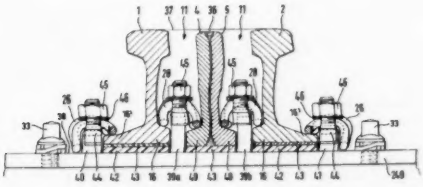
PCT No. PCT/EP97/04561, § 371 Date Jun. 14, 1999, § 102(e) Date Jun. 14, 1999, PCT Pub. No. WO98/07928, PCT Pub. Date Feb. 26, 1998

PCT Filed Aug. 21, 1997, Appl. No. 242,755

Claims priority, application Germany, Aug. 21, 1996, 196 33 694

Int. Cl. E01B *7/10*

U.S. Cl. 246—454 **13 Claims**



1. A rigid railroad frog for switch points and crossings comprising:

two wing rails each having a foot;

a frog point defining a rail surface, the frog point having a foot and being arranged between the wing rails, the wing rails and frog point defining switch openings therebetween which extend at an acute angle relative to one another for free passage of a wheel flange of a wheel;

a ribbed plate having vertically protruding ribs, the wing rails and frog point supported on the ribbed plate and secured to the ribbed plate by vertically oriented elastic anchor clamps, the foot of each wing rail and the foot of the frog point being fitted between the ribs to inhibit horizontal motion of the wing rails and the frog point transverse to a longitudinal direction of the wing rails and to thereby fix the width of the switch opening, the wing rails and the frog point fixed against said horizontal motion solely by the ribs.

US 6,340,141 B1

CABLE SUPPORT SYSTEMS, METHODS, AND RACK THEREFOR

Eric R. Rinderer, Highland, Ill., assignor to Cooper Technologies Company, Houston, Tex.

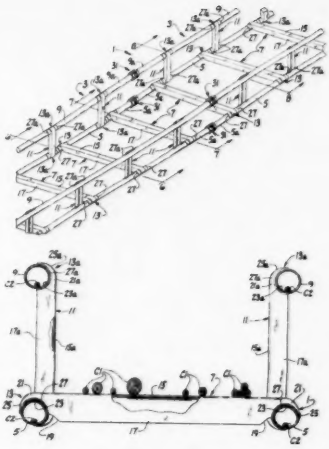
Filed Jun. 10, 1997, Appl. No. 871,923

Int. Cl. F16L *3/00*

U.S. Cl. 248—49 **32 Claims**

1. A support for electrical cable comprising:

a series of elongate racks connected together end-to-end;



each rack comprising a pair of elongate lower members extending in parallel spaced relation longitudinally with respect to the rack at opposite sides thereof;

cross-members extending transversely with respect to the rack between said lower longitudinal members spaced at intervals along the length of the rack and holding said lower members in said parallel spaced relation;

said cross-members serving to support cable laid thereon;

a pair of elongate upper members extending in parallel spaced relation longitudinally with respect to the rack above said lower members;

side members extending between the lower and upper longitudinal members spaced at intervals along the length of the rack and holding said upper members in parallel relation to the lower members spaced above the lower members;

each of said lower and upper longitudinal members comprising a metal tube of circular cross-section;

each of said cross-members being an elongate sheet metal member having a reach extending between the lower tubes formed so as to be stiffened against bending and having formations at opposite ends thereof with a part-circular contour fitted on and secured to the lower tubes;

said side members and upper tubes forming railings at opposite sides of the rack for retaining cable on the cross-members;

the racks being interconnected end-to-end by couplings which couple together adjacent ends of at least some of the tubes of successive racks in the series.

US 6,340,142 B1

CLAMP DEVICE FOR HOLDING A RADAR SENSOR ON A BUMPER OF AN AUTOMOBILE

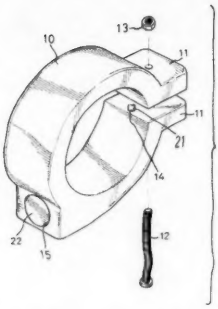
Shih-Hsiung Li, 8th Fl.-1, No. 23, Sec. 1, Harng-Chou S. Rd., Taipei, Taiwan

Filed Jul. 10, 2000, Appl. No. 613,285

Int. Cl. F16L *3/08*

U.S. Cl. 248—74.1 **6 Claims**

1. A clamp device for holding a radar sensor (**22**) on a bumper of an automobile, comprising: a body (**10**) having a pair of end lips (**11**) extending therefrom, a channel (**16**) for receiving an electric cable (**21**) electrically connected to the radar sensor (**22**), and a chamber (**15**) defined therein for accommodating the radar sensor,



said lips (**11**) having aligned mounting holes for fixing the body (**10**) on the bumper of said automobile.

US 6,340,143 B1

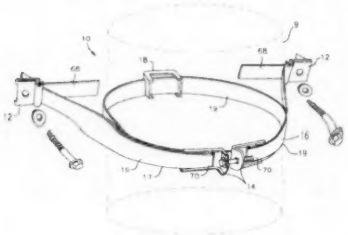
FASTENING APPARATUS

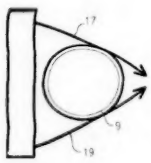
William J. McCraney, Laguna Hills, Calif., assignor to Watts Investment Co., Wilmington, Del.

***Division of application No. 09/097,369, filed on Jun. 15, 1998,* now Pat. No. 6,145,796, which is a continuation-in-part of application No. 09/069,372, filed on Apr. 29, 1998, now abandoned. This application Aug. 10, 2000, Appl. No. 636,199.**

Int. Cl. A47G *23/02*

U.S. Cl. 248—154 **21 Claims**





1. A disaster safety assembly comprising:

a water heater having a rear portion facing a supporting structure and a front portion facing away from the supporting structure; and

at least one elongated, bendable strap extending from the supporting structure to the front portion, then to the rear portion, then to the front portion making a complete circuit of the water heater.

US 6,340,144 B1

DECORATIVE STRUCTURE FOR CAR EXHAUST PIPE

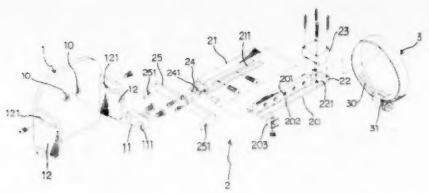
Shun Tian Shuen, San Chung, Taiwan, assignor to Janchy Enterprises Co., Ltd., Taipei, Taiwan

Filed Aug. 18, 2000, Appl. No. 640,996

Int. Cl. E04G *3/00*

U.S. Cl. 248—205.1 **7 Claims**

1. Decorative structure for car exhaust pipe, comprising:



a panel block for a decorative picture piece to dispose on a surface thereof, a back face of the panel block being formed with thread holes at which a pivot block is locked, two sides of the back face of the panel block being formed with connecting wings opposite to each other, each connecting wing being formed with an arch slot;

an adjusting unit including a fixing bar having a reverse T-shaped cross-section and a slide bar having a reverse U-shaped cross-section, the fixing bar and the slide bar being fitted with each other, a central swelling section of the fixing bar being formed with multiple through locating holes, a bottom face of the fixing bar being formed with multiple shallow circular dents, one end of the fixing bar being formed with a fixing section having a recess with arch face for a fastening ring to inlay, a fixing block being mated with the arch face and locked in the recess by screws, two lateral sides of the slide bar being formed with slots corresponding to the locating holes, one end of the slide bar being formed with a pair of lugs having aligned through holes, a connecting lever being locked under the lugs, two arms of the connecting lever being formed with orifices; and

a fastening ring which is a resilient metal sheet which is curled into a hoop, the fastening ring being formed with multiple adjusting bores arranged at equal intervals from one end of the fastening ring by a certain distance, a screw adjuster being disposed at overlapping sections of two ends of the fastening ring, whereby the panel block can be freely swung, the adjusting unit can be adjusted in length and the fastening ring can be adjusted in inner diameter so that the decorative structure can be installed on various specifications and diameters of car exhaust pipes.

US 6,340,145 B1

COMPUTER FASTENING DEVICE

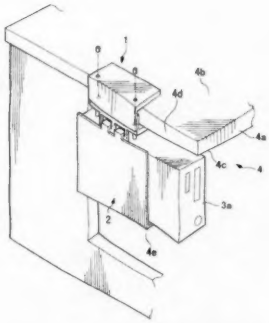
Mitsuhiro Tagami, and Masayuki Terao, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 18, 1999, Appl. No. 376,499

Claims priority, application Japan, Aug. 19, 1998, 10-232677

Int. Cl. A47F *1/10;* **A47H** *1/10;* **A47N** *37/00*

U.S. Cl. 248—317 **7 Claims**



1. A computer fastening device for fastening a computer to a desktop of a desk, comprising:

a desk fastening member for detachably fastening to an edge of the desktop; and

a computer holding member having a side plate extending downwardly from the desk fastening member and having a bottom plate extending laterally from the side plate for supporting the computer thereon,

wherein the computer holding member is detachably connectable to the desk fastening member at an upper part of the side plate, and the computer holding member is positionable at a first position relative to the desk fastening member where the support is adapted to face inside of a kneehole of the desk and at a second position relative to the desk fastening member where the support is adapted to face outside of the kneehole.

US 6,340,146 B1

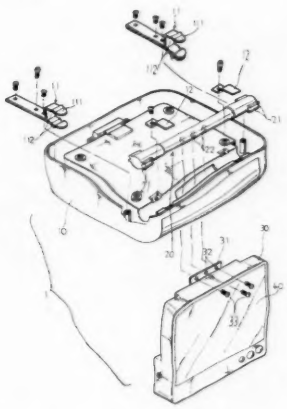
CEILING LCD MOUNTING STRUCTURE

A-Shui Tzeng, Pan Chiao, Taiwan, assignor to Proton Electronic Industrial Co., Ltd., Pan Chiao, Taiwan

Filed Jul. 28, 2000, Appl. No. 628,431

Int. Cl. A47H *1/10*

U.S. Cl. 248—317 **6 Claims**



1. A ceiling LCD mounting structure comprising:

a mounting base fixedly fastened to the ceiling of a car, said mounting base comprising a bottom receiving chamber defined in a bottom side wall thereof, two clamping plates fixedly mounted in a top side wall thereof, and at least one holding down plate;

a pivot shaft coupled between said clamping plates and held down by said at least one holding down plate and adapted to be rotated relative to said clamping plates and positioned in one of a series of angles; and

a LCD holder frame holding a LCD (liquid crystal display), said LCD holder frame having mounting means fastened to said pivot shaft for enabling said LCD holder frame to be turned in and out of said bottom receiving chamber of said mounting base.

US 6,340,147 B1

FENCE POST HOLDER

Jeff Dymarczyk, 243 Laurel Hill Ave., Norwich, Conn. 06360

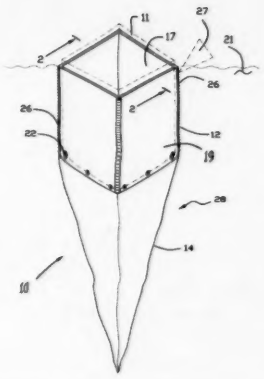
Filed Jul. 21, 2000, Appl. No. 625,192

Int. Cl. F16M *11/00*

U.S. Cl. 248—530 **10 Claims**

1. A fence post support device comprising:

a support portion having a closed bottom, an open top and a perimeter side wall extending between said closed bottom and



said open top to define an interior space adapted for receiving a base of a fence post inserted through said open top; and

an insertion portion extending downwardly from said support portion, said insertion portion having a bottom point whereby said insertion portion is adapted for facilitating insertion of said insertion portion into a ground surface; and

said perimeter wall of said support portion having a plurality of exterior edges extending between said closed bottom and said open top, each of said exterior edges having a plurality of teeth for facilitating removal of said fence support device from the ground using a garden tool.

US 6,340,148 B1

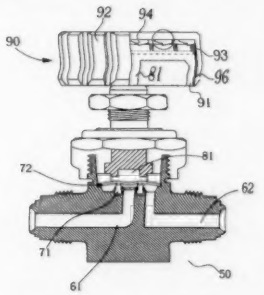
VALVE HANDLE FOR PREVENTING A VALVE FROM BEING ACCIDENTALLY TURNED ON

Kuo-Wei Sung, Chungli, Taiwan, assignor to United Microelectronics Corp., Hsin-Chu, Taiwan

Filed Aug. 29, 2000, Appl. No. 651,582

Int. Cl. F16K *35/00;31/44;31/00*

U.S. Cl. 251—96 **12 Claims**



1. A valve handle that prevents the valve from being mistakenly turned on, the valve comprising:

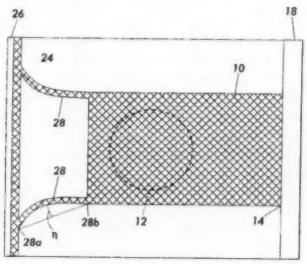
a fixing ring that mobilizes a valve stem and causes the valve stem to ascend or descend, the fixing ring having at least one stopper; and

a knob housing that covers and drives the fixing ring, a top inner side of the knob housing having at least one protrusion that works with the stopper of the fixing ring, the protrusion having a first vertical plane, a second vertical plane and a slant plane;

wherein as an operator turns the knob housing in a first direction, the first vertical plane pushes the stopper and moves the fixing ring in the first direction, making the stem descend to place the valve in a closed state; and as the operator turns the knob housing in a second direction, the slant plane slips past

the stopper and so is unable to move the fixing ring so that the valve is difficult to turn to an open state; wherein the valve is turned to the open state by an operator pushing downward on the knob housing and simultaneously turning the knob in the second direction, causing the second vertical plane to interact with the stopper, moving the fixing ring and the stem so as to make the stem ascend.

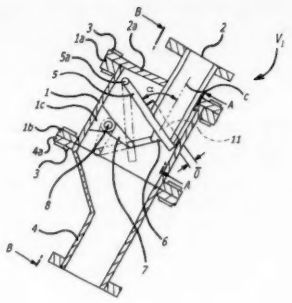
US 6,340,149 B1
TETHERED FLUID VALVE APPARATUS
David Kalman Biegelsen, Portola Valley, and Lars-Erik Swartz, Sunnyvale, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 27, 2000, Appl. No. 721,676
Int. Cl. F16K *31/02*
U.S. Cl. 251—129.06 **7 Claims**



1. A flap valve structure comprising:
a valve support structure including an orifice for modulating fluid flow;
a flexible flap valve element disposed over the orifice to open and close the orifice, the flexible flap valve element having first and second ends with the first end attached to the flap valve support structure;
at least one flexible tether substantially narrower than the width of the first end of the flexible flop element extending from the second end of the flexible flap element and connected to the flap valve support structure; and
a control device connected to the flap valve structure to selectively hold the flexible flap valve element in an open or closed position over the orifice.

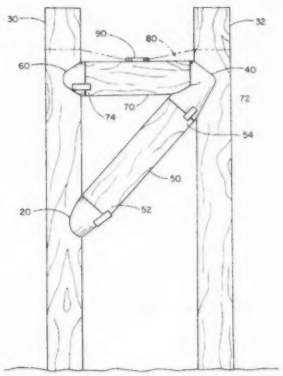
US 6,340,150 B1
FLOWRATE CONTROL VALVE FOR POWDER AND GRANULAR MATERIAL
Satoshi Sato, and Hiroki Nomoto, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan
PCT No. PCT/JP98/04728, § 371 Date Aug. 4, 2000, § 102(e) Date Aug. 4, 2000, PCT Pub. No. WO00/23733, PCT Pub. Date Apr. 27, 2000
PCT Filed Oct. 19, 1998, Appl. No. 601,649
Int. Cl. F16K *1/20*
U.S. Cl. 251—298 **2 Claims**

1. A flow control valve for ore fines comprising an ore fines inlet pipe whose lower end is cut at a prescribed angle and a swinging plate installed in swingable fashion to control the flow rate of ore fines by controlling the opening degree between the swinging plate and the lower end of the ore fines inlet pipe, wherein the ore fines inlet pipe is installed with its axis center tilted at an angle greater than the angle of repose of the ore fines, the swinging plate, when it keeps contact with the lower end of the ore fines inlet pipe, makes an acute angle with the axis center of the ore fines inlet pipe and the swinging plate is supported at an upper end thereof so that the support portion is positioned above the lower end opening of the ore fines inlet pipe, and an edge plate of prescribed height is



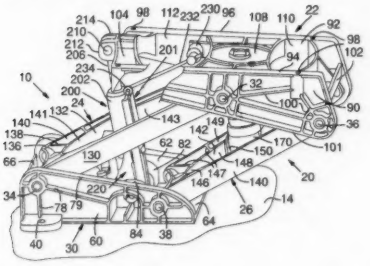
provided around three sides except a free end side of the surface of the swinging plate which closes the lower end of the ore fines inlet pipe.

US 6,340,151 B1
FENCE CORNERPOST ASSEMBLY BRACKETS
Jimmy D. Snow, 5008 Colfax Pl., Oklahoma City, Okla. 73112
Provisional application No. 60/164,725, filed on Nov. 12, 1999. This application Nov. 9, 2000, Appl. No. 711,286.
Int. Cl. E04H *17/14*
U.S. Cl. 256—65 **3 Claims**



1. A set of components for the placement and support between a first vertical fencing post and a second vertical fencing posts, the invention comprising:
a. a shoe component attaching to the first vertical fencing post;
b. a saddle component attaching to the second vertical fencing post;
c. a tie component attaching to the first vertical post above the shoe component;
d. an angled brace post between the shoe component and the saddle component;
g. a horizontal brace post between the tie component and the saddle component;
d. a draw wire attached to the first vertical fencing post and the second vertical fencing post, twisted to shorten the length of the draw wire until the angled brace post and horizontal brace post are immovably secured between the first vertical fencing post and second vertical fencing post; and
e. a cinch bracket attaching to the twisted draw wire, securing the draw wire to the horizontal brace post.

US 6,340,152 B1
SEAT SUSPENSION VIBRATION DAMPER
Norman E. Ritchie; Christopher J. Sameck, both of Portland, and Marc Milobinski, Scappoosse, all of Oreg., assignors to Freightliner LLC, Portland, Oreg.
Filed Feb. 4, 1999, Appl. No. 245,053
This patent is subject to a terminal disclaimer.
Int. Cl. F16F *5/00*
U.S. Cl. 267—64.12 **25 Claims**



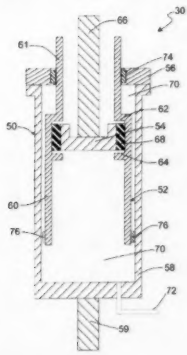
1. A vibration damper for a seat suspension system of the type which supports a seat above the floor of a vehicle, the seat being raisable and lowerable to support the seat at various selected elevations relative to the floor of the vehicle, and wherein movement of the seat from a selected elevation in response to vibrations is permitted, the vibration damper comprising:

a first member adapted for coupling to one of the vehicle and seat;

a shock absorber adapted to be coupled to the other of the vehicle and seat; and

a latch adapted to selectively couple the first member to the shock absorber such that when the shock absorber and first member are coupled together the shock absorber applies a dampening force to the seat at least partially in opposition to elevation changes of the seat from a selected elevation in response to vibrations, and such that when the shock absorber and first member are decoupled from one another the shock absorber is relieved from applying the dampening force to the seat.

US 6,340,153 B1
SHOCK AND ACOUSTIC MOUNT
John E. Miesner, Fairfax, Va., assignor to General Dynamics Advanced Technology Systems, Inc., Greensboro, N.C.
Filed Nov. 2, 2000, Appl. No. 704,928
Int. Cl. F16F *5/00*
U.S. Cl. 267—140.11 **34 Claims**



1. A mount for providing support between first and second relatively movable members and reducing vibration and shock transmission between the members, the mount comprising:

a hollow cylindrical casing having a longitudinal axis, a first closed end and a second end having an opening, the casing adapted to be attached to the first movable member;

a hollow cylindrical housing open at both ends and disposed for axial movement within the casing through the opening in the second end of the casing, a portion of the housing extending outwardly of the opening;

a piston disposed in the housing and sealingly bonded to the inner surface of the housing so that the piston is axially movable relative to the housing by deformation of the bond material, the piston including a piston rod having an end portion extending outwardly of the housing and adapted to be attached to the second movable member;

a compressible fluid filling a variable volume chamber defined by the casing, the housing, and the piston; and

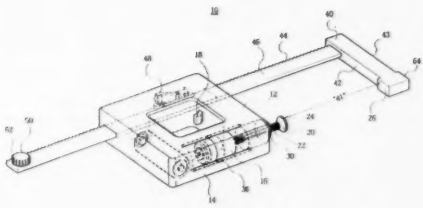
an annular seal radially interposed between the inside edge of the opening in the second end of the casing and the outer surface of the housing for sealing against fluid leakage between the casing and housing,

wherein the housing and piston are acted on by the compressible fluid to urge the housing and piston to an axial position relative to the casing, and the static friction between the housing and annular seal and the stiffness of the bond material between the piston and the housing are selected so that only the piston moves relative to the casing in response to axial external forces on the movable members less than a predetermined net force for reducing vibration transmission between the members, and

the housing and piston move together relative to the casing when the static friction between the annular seal and the housing is overcome by axial external forces on the movable members greater than the predetermined net force for reducing vibration transmission between the members,

whereby a compressible fluid spring is provided with large allowable relative movement of the movable members.

US 6,340,154 B1
MOTORIZED CLAMP DEVICE
Craig D. Young, 2027 N. Lake Ave., #9, Altadena, Calif. 91001
Filed Jul. 25, 2000, Appl. No. 624,830
Int. Cl. B25B *1/10*
U.S. Cl. 269—246 **20 Claims**



1. A motorized clamp device comprising:

a) a motor housing having a first channel;

b) a first motor movably positioned within the first channel;

c) a motor control switch attached to the motor housing;

d) a first head attached to and powered by the first motor, the first head having a first shaft and a first contact surface;

e) a first torque collar attached to the motor housing, the first torque collar having a first aperture that receives the first shaft; and

f) a second contact surface attached to the motor housing;

wherein when the first motor causes the first shaft to rotate, the first shaft passes through the first aperture of the first torque collar and force is applied to an object by the first contact surface and the second contact surface, and the first motor travels within the first channel as the first shaft passes through the first torque collar.

US 6,340,155 B1

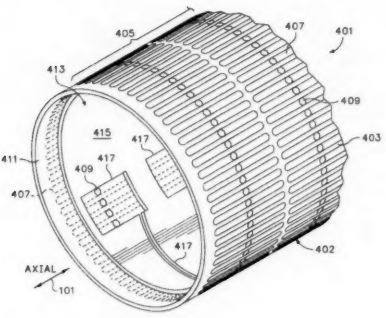
SLIDING VALVE VACUUM HOLDDOWN METHOD APPARATUS

Jeffrey C. Madsen, and Steven P. Downing, both of St Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of application No. 09/377,368, filed on Aug. 18, 1999. This application Oct. 20, 2000, Appl. No. 693,262.

Int. Cl. B65H *29/00;43/00*

U.S. Cl. 271—183 **18 Claims**



1. A vacuum holddown apparatus, having a vacuum source, comprising:

at least two sheets of material, said sheets separating a substrate held by vacuum from the vacuum source, wherein each of the sheets is provided with a plurality of vacuum ports and each sheet has a different pattern of the vacuum ports, wherein said sheets are mounted in sliding contact engagement such that shifting said engagement varies the pattern of vacuum application through the pair, one of said sheets having a surface for exerting a vacuum force on said substrate through the respective vacuum ports thereof, such that sliding said at least two sheets relative to each other causes re-distribution of the vacuum force at said surface in accordance with the immediate alignment of the at least two sheets, and re-alignment of the sheets provides vacuum distribution adjustment in a direction of travel of the substrate.

US 6,340,156 B1

SHEET-TRANSPORTING DEVICE AND IMAGE-FORMING APPARATUS

Itsuo Sekita, Mishima, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 2000, Appl. No. 546,708

Claims priority, application Japan, May 13, 1999, 11-132394

Int. Cl. B65H *5/34*

U.S. Cl. 271—270 **18 Claims**

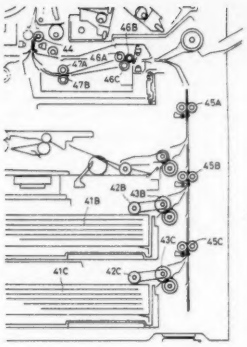
1. A sheet-transporting device comprising:

first transporting means for transporting sheets, said first transporting means having a first driving torque; and

second transporting means for transporting the sheets at a location downstream from said first transporting means in a sheet:-transporting direction, said second transporting means having a second driving torque, the second driving torque being greater than the first driving torque;

wherein a speed of the first transporting means and a speed of the second transporting means are each switchable between a first transporting speed and a second transporting speed which is greater than the first transporting speed; and

wherein a time required to switch the speed of the second transporting means from the first transporting speed to the second transporting speed is longer than a time required to switch the speed of the first transporting means from the first transporting speed to the second transporting speed.



US 6,340,157 B1

RECORDING APPARATUS CAPABLE OF RECORDING IMAGES ON BOTH SIDES OF RECORDING PAPER

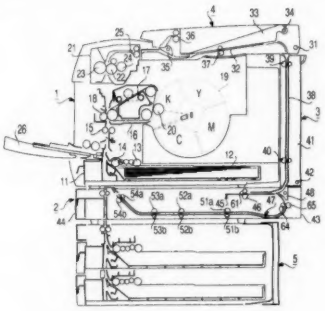
Kazuo Watanabe; Toshihiko Okamuro, both of Utsunomiya; Toshiyasu Inoue, and Hiroshi Yoshida, both of Takanezawa-machi, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Jul. 11, 2000, Appl. No. 613,629

Claims priority, application Japan, Jul. 16, 1999, 11-202966

Int. Cl. B65H *39/10*

U.S. Cl. 271—301 **23 Claims**



1. A recording apparatus comprising:

a housing comprising a main body of the apparatus;

a recording section provided inside the housing;

a one-side path, formed inside the housing, which is configured to feed recording paper to the recording section, and to discharge the recording paper out of said housing with an image recorded thereon; and

a two-side path that is formed around an outer edge of the housing except an area of the one-side path, and that returns the recording paper discharged from the two-side path to the one-side path after inverting the recording paper,

wherein the two-side path extends along outer edges of a top, a rear and a bottom of the housing to return to the one-side path.

US 6,340,158 B2

PACHINKO STAND-ALONE AND BONUSING GAME

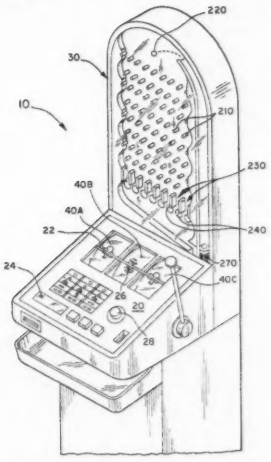
Jesse E. Pierce, Las Vegas, Nev., and Olaf Vancura, Somerville, Mass., assignors to Mikohn Gaming Corporation, Las Vegas, Nev.

Continuation of application No. 09/353,550, filed on Jul. 14, 1999, now Pat. No. 6,220,593, which is a division of application No. 09/098,804, filed on Jun. 17, 1998, now Pat. No. 6,047,963, Provisional application No. 60/081,724, filed on Apr. 14, 1998. This application Mar. 15, 2001, Appl. No. 810,147.

This patent is subject to a terminal disclaimer.

Int. Cl. A63B *71/00*

U.S. Cl. 273—138.1 **24 Claims**



1. A Pachinko game comprising:

a playing field, said playing field

a play piece;

lanes on said playing field, said play piece traveling through one of said lanes;

a payoff display at each of said plurality of lanes on said playing field;

a credit meter incremented by the amount of the payoff value on said display at said lane said play piece traveled through;

a play piece sensor in each of said lanes;

a controller, said controller (1) randomly selecting said payoff values from a pay table for display in said payoff displays, (2) receiving a signal from the sensor at said lane said play piece traveled through, and (3) incrementing said credit meter by said amount.

US 6,340,159 B1

"DOUBLE CROSS™" GAME SHOW

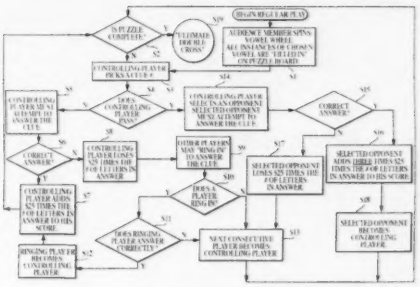
George Giangrante, 228 Kennedy Blvd., Bellmawr, N.J. 08031

Provisional application No. 60/151,085, filed on Aug. 27, 1999. This application Aug. 23, 2000, Appl. No. 643,745.

Int. Cl. A63F *3/00*

U.S. Cl. 273—272 **18 Claims**

1. In a modified crossword puzzle gameshow, including a game board having a plurality of shapes substantially defining a plurality of columns and a plurality of rows intersecting and formed thereby, each of the shapes accommodating at least one of at least one letter and at least one word, the modified crossword puzzle game further including at least one clue associated with, and optionally providing at least partial information regarding the at least one of the at least one letter and the at least one word, a method of playing the modified crossword puzzle game with a plurality of players at least including first and second players, comprising the steps of:



(a) presenting the at least one clue to at least one of the first and second players associated with and optionally providing the at least partial information regarding the at least one of the at least one letter and the at least one word;

(b) responding, by the at least one of the first and second players, to the at least one clue presented in said presenting step (a);

(c) determining whether the response by the at least one of the first and second players provided in said responding step (b) is at least substantially correct;

(d) when the at least one of the first and second players is at least substantially correct as determined in said determining step (c), revealing the at least one of the at least one letter and the at least one word accommodated by at least a first section of the plurality of shapes, and rewarding the at least one of the first and second players, and when the at least one of the first and second players is at least substantially incorrect, providing another of the first and second players with the option of responding to the at least one clue or being presented with at least another clue; and

(e) repeating said steps (a)–(d) for each of the first and second players in accordance with predetermined criteria until at least substantially all of the plurality of shapes substantially defining the plurality of columns and plurality of rows are revealed, thereby at least substantially solving the modified crossword puzzle game,

wherein said responding step (b) optionally includes the step of the at least one of the first and second players choosing to guess the at least one letter or at least one word associated with the at least one clue and accommodated by the at least one or choosing to "double cross" another of the first and second players thereby challenging the other at least one of the first and second players to guess the at least one letter and at least one word.

US 6,340,160 B1

SYSTEM FOR SEALING RELATIVELY MOVABLE ELEMENTS

Gilbert W. Younger, 2621 Merced Ave., El Monte, Calif. 91733

Continuation-in-part of application No. 08/940,172, filed on Sep. 30, 1997, and a continuation-in-part of application No. 08/940,359, filed on Sep. 30, 1997. This application May 18, 1999, Appl. No. 313,927.

Int. Cl. F16J *9/00;9/06;15/54;* **F01C** *19/10*

U.S. Cl. 277—447 **10 Claims**

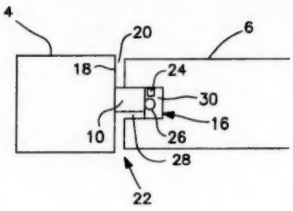
1. A system for providing a seal for preventing fluid flow between relatively rotatable elements, said system comprising:

first and second relatively rotatable elements;

said first element having a groove defined therein for receiving a seal element and retaining said seal element at a predetermined orientation relative to said second element;

a seal element removably received in said groove; and

a spacer element disposed between said seal element in said groove and said first element, said spacer element being formed from a substantially non-resilient material;



wherein said first element is a piston having an opening therein, said groove being defined around a periphery of said opening in said piston;

wherein said second element is a drum having a hub, said hub of said drum adapted to be received in said opening in said piston;

said piston and said drum being arranged such that said seal element extends inwardly from said opening in said piston and is contiguous with an outer surface of said hub of said drum when said hub is received in said opening in said piston.

US 6,340,161 B1

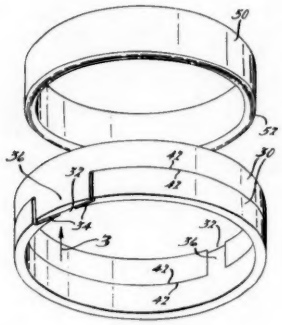
MACHINERY SEAL

Gordon T. Zitting, Sandy, and Todd Hagen, West Valley City, both of Utah, assignors to Macrotech Polyseal, Inc., Salt Lake City, Utah

Filed Feb. 16, 2000, Appl. No. 504,451

Int. Cl. F16J *9/12*

U.S. Cl. 277—459 **3 Claims**



1. A seal assembly for relatively movable cylindrical machine parts, one of said machine parts having a groove with first and second axially spaced walls and a radially extending wall, comprising:

a pair of annular seal elements each having an axial slot therein bounded by a pair of oppositely sloped axial surfaces and a male key portion extending axially from said elements, said elements arranged in an inverted nesting relationship whereby the axial surfaces of one of said elements engage the male key portion of the other of said elements; and

an annular support element having an axial width less than the axial width of said groove to facilitate expansion therein, said support element disposed radially inwardly of said annular seal elements whereby said support element biases said seal elements opposite the radially extending wall of said groove, thereby forcing the oppositely sloped axial surfaces of said seal elements into very close proximity with the male key portions thereof and preventing extrusion of said support element into the axial slots of said seal elements and providing retention of said annular seal elements in said groove,

wherein the male key portion has a radially inwardly directed delta shaped cross section comprising a flattened apex and opposed beveled surfaces sloped oppositely away from the apex and wherein the oppositely sloped axial surfaces of said annular element are shaped to engage the opposed beveled surfaces of the male key portion.

US 6,340,162 B1

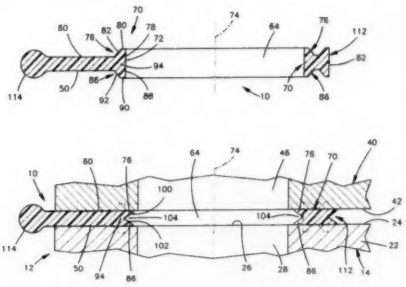
SEAL FOR INTEGRAL POWER STEERING GEAR

James Martin Hobaugh, II, Lafayette, Ind., assignor to TRW Inc., Lyndhurst, Ohio

Filed Aug. 13, 1999, Appl. No. 373,670

Int. Cl. F16L *17/03;* **F02F** *11/00*

U.S. Cl. 277—594 **10 Claims**



1. A seal for use in a hydraulic apparatus, the hydraulic apparatus having first and second parts fastened to each other, the first and second parts having facing major side surfaces that include aligned fluid pressurized openings, said seal for sealing between the major side surfaces of the first and second parts;

said seal having generally planar inner and outer major side surfaces and a seal opening extending therebetween that is aligned with the openings in the first and second parts when the second part is secured to the first part with the seal clamped between them;

said seal having an annular edge portion extending around and defining said opening in said seal, said edge portion having a free condition in which annular lip portions of said seal edge portion project from the planes of said inner and outer major side surfaces of said seal;

said seal edge portion having a clamped condition when clamped between the first and second parts in which said lip portions are disposed between the planes of said inner and outer major side surfaces of said seal;

said lip portions when in the clamped condition defining an annular groove extending around said edge portion, said annular groove being configured to receive fluid pressure to act on said lip portions to urge said lip portions into sealing engagement with the first part and with the second part;

said lip portions when in the free condition having cylindrical inner surfaces which in the clamped condition define said annular groove which receives fluid pressure,

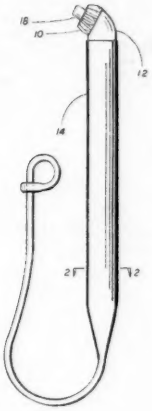
said lip portions further including an inner lip portion for engagement with the first part and an outer lip portion for engagement with the second part, said inner lip portion, when in the free condition, having a cylindrical inner surface, an annular surface that extends radially outward from said cylindrical surface, and a frustoconical surface that extends radially outward from said annular surface and axially to said inner major side surface of said seal.

US 6,340,163 B1

SNAG-RESISTANT CHUCK KEY

Brady John Newman, 8155 Watt Ave., #169, Antelope, Calif. 95843

Filed Nov. 28, 2000, Appl. No. 724,920
Int. Cl. B25B *13/44;* **B23B** *31/06*
U.S. Cl. 279—147 **4 Claims**



4. A snag-resistant chuck key of the type for attachment to a power cord serving an electric drill comprising:

(a) means for holding and operating said chuck key,

(b) means for applying torque and providing leverage while using said chuck key,

(c) means for allowing said chuck key to move freely across obstacles, and to roll away from obstructions, without snagging,

(d) means for engaging a drill chuck to adjust the jaws thereof, and

(e) means for attaching said chuck key to said power cord, whereby said chuck key, when tethered to and trolled from said power cord, resists snagging on obstacles encountered in a work area.

US 6,340,164 B1

SKATE, ESPECIALLY AN IN-LINE ROLLER SKATE, FOR "AGGRESSIVE" SKATING

René Borel, Saint-Sylvestre, France, assignor to Salomon S.A., Metz-Tessy, France

Filed Mar. 14, 2000, Appl. No. 525,131
Claims priority, application France, Mar. 15, 1999, 99 03492
Int. Cl. A63C *17/02*
U.S. Cl. 280—11.225 **38 Claims**

1. A skate comprising:

a chassis supporting a gliding element for practicing aggressive skating, the chassis including an upwardly facing support plate;

a boot fitting portion including a soft upper portion and a rigid sole;

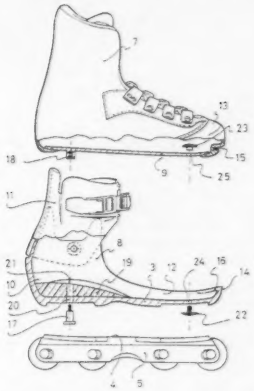
a hard cradle adapted to receive the boot fitting portion and having at least a partially open front portion;

the hard cradle comprising a heel stiffener portion, a sole, and a lateral peripheral band bordering a front portion and side portions of the sole;

the sole of the hard cradle being adapted to be fixed on the chassis;

an internal wedging element comprising an elastically deformable material;

the internal wedging element being disposed in a heel area of the hard cradle and being adapted to be trapped between the rigid sole of the boot fitting portion and the sole of the hard cradle;



the internal wedging element being adapted to adjust an inclination of the rigid sole of the boot fitting portion relative to the sole of the hard cradle and to provide shock-absorption;

a first fixing mechanism arranged in a front portion of the skate for assembling the boot fitting portion onto the hard cradle;

a second fixing mechanism arranged in a heel portion of the skate for assembling the boot fitting portion onto the hard cradle; and

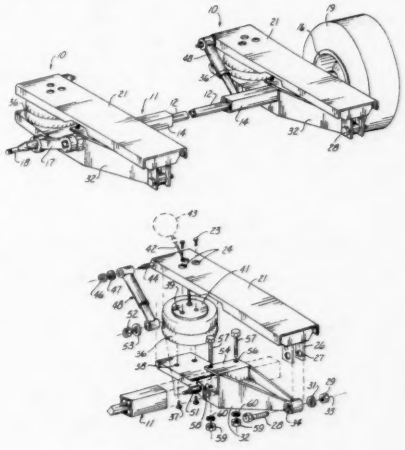
the second fixing mechanism being adjustable and comprising a screw which extends through an opening in the internal wedging element and a threaded blind barrel for fixing the rigid sole of the boot fitting portion to the sole of the hard cradle.

US 6,340,165 B1

TORSION AXLE AND AIR BAG VEHICLE SUSPENSION SYSTEM

Gary L. Kelderman, 2674 Hwy. 92, Oskaloosa, Iowa 52577

Filed Aug. 20, 1999, Appl. No. 377,414
Int. Cl. B60G *3/99*
U.S. Cl. 280—124.153 **29 Claims**



1. A vehicle suspension system comprising:

a frame;

an arm operably pivotally attached to the frame along an axis;

a torsion axle operably attached to said arm at a first distance spaced from said axis;

an air bag operably attached at the top thereof to said frame and at the bottom thereof to said arm, said air bag being spaced at a second distance from said axis; and

a linkage element of variable length operably attached to said frame and to said arm whereby said arm will be biased to a predetermined position with respect to said frame yet allow the arm to pivot about said axis.

US 6,340,166 B1

KICKSTAND SUPPORT BASE FOR MOTORCYCLES

David A. Rethman, and Debra Ann Rethman, both of 11528 Cherry Blossom Dr. West, Fishers, Ind. 46038

Provisional application No. 60/138,606, filed on Jun. 11, 1999. This application May 16, 2000, Appl. No. 571,856.

Int. Cl. B62H *1/02*

U.S. Cl. 280—293 **7 Claims**

1. A kickstand support device for a motorcycle comprising:

a substantially planar base having an upper surface, a proximal end and a distal end, said base including a substantially U-shaped wall formed on the upper surface proximate the distal end for retaining a foot portion of a kickstand;

an arm having a first end attached to the proximal end of said base and a second end, said arm extending upwardly at a predetermined angle with respect to the base; and

cooperating fastening members for encircling a shank portion of the kickstand, one of said fastening members being attached to the second end of said arm.

US 6,340,167 B1

ANTI-JACKKNIFE TRAILER COUPLING

Joseph J. Boyd, 103 Timberland Rd., Cumming, Ga. 30040

Filed Apr. 7, 2000, Appl. No. 544,747

Int. Cl. B62D *53/06*

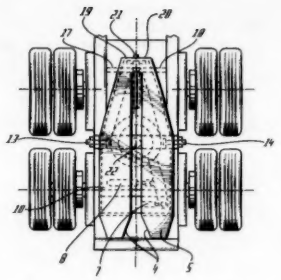
U.S. Cl. 280—432 **16 Claims**

1. Anti-jackknife system for a tractor trailer, the tractor having a steering wheel, the trailer having engagement pins, said anti-jackknifing system comprising:

(a) a socket plate mounted on the tractor via a rotatable shaft, said socket plate capable of engaging the engagement pins of the trailer;

(b) a brake assembly capable of braking the rotatable shaft and inhibiting pivoting action between the tractor and trailer; and

(c) an automated control system capable of activating said brake assembly in response to a difference in directions between the trailer and the tractor wheels, upon such difference, the trailer is rigidly connected to the trailer, wherein said automated



control system incorporates a steering switch and a coupling switch, that are cross-coupled in series such that when the trailer moves in a direction other than the way the tractor wheels are turned, the steering switch and the coupling switch trigger thereby rigidly connecting the tractor to the trailer;

said anti-jackknife system capable of flexibly connecting the tractor to the trailer under ordinary driving conditions, and said system capable of rigidly connecting the tractor to the trailer upon the beginning of a jackknife situation.

US 6,340,168 B1

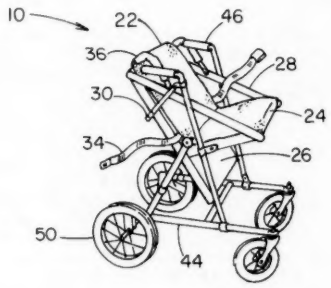
CONVERTIBLE CHAIR AND WALKER ASSEMBLY

Norman Woleen, Parma, Ohio, assignor to Doris W. Alexander, Arlington, Tex., part interest

Filed Aug. 25, 2000, Appl. No. 648,229

Int. Cl. B62B *7/12;* **B62D** *39/60;* **A45B** *5/00;* **A47B** *85/04*

U.S. Cl. 280—643 **19 Claims**



1. A convertible chair and walker assembly comprising:

a frame assembly;

a plurality of wheels coupled to said frame assembly whereby said frame assembly is adapted for facilitating moving of said frame assembly on a supporting surface;

a seat assembly pivotally coupled to said frame assembly, said seat assembly having a seat and a back portion, said seat having a generally planar bottom surface;

said seat assembly being pivotable between an upright position and an inverted position, said upright position being defined by said seat facing upwards whereby said seat is adapted for supporting a person sitting in said seat, said inverted position being defined by said seat facing downwardly such that said bottom surface faces up whereby said frame assembly is usable as a walker and said bottom surface having a tray portion is adapted for supporting objects placed on of said bottom surface.

US 6,340,169 B1

HAND GRIP BRACKET AND ASSEMBLY COMPRISING A HAND GRIP BRACKET AND A HEAD SIDE GAS BAG MODULE

Hans-Joachim Tietze, Heubach, Germany, assignor to TRW Occupant Restraint Systems GmbH & Co. KG, Alfdorf, Germany

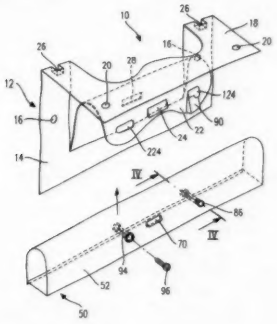
PCT No. PCT/EP99/02254, § 371 Date Sep. 29, 2000, § 102(e) Date Sep. 29, 2000, PCT Pub. No. WO99/51457, PCT Pub. Date Oct. 14, 1999

PCT Filed Apr. 1, 1999, Appl. No. 647,375

Claims priority, application Germany, Apr. 2, 1998, 298 06 080 U

Int. Cl. B60R *21/16*

U.S. Cl. 280—728.2 16 Claims



16. Apparatus comprising:

a bracket having structure for attachment of the bracket to a vehicle;

said bracket having a hand grip attachment for attaching a hand grip to said bracket; and

said bracket having an air bag module attachment for attaching an air bag module to said bracket.

US 6,340,170 B1

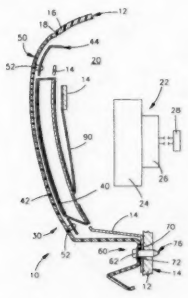
ACTUATABLE KNEE BOLSTER

Michael B. Davis, Clarkston, and Garry Hayes, Rochester Hills, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Mar. 28, 2000, Appl. No. 536,942

Int. Cl. B60R *21/22*

U.S. Cl. 280—730.1 15 Claims



1. An apparatus for helping to protect an occupant of a vehicle having an instrument panel, said apparatus comprising:

a knee bolster movable in the vehicle from a stored position adjacent the instrument panel of the vehicle to a blocking position spaced apart from the vehicle instrument panel;

said knee bolster having at least one fastener opening and a tear seam extending around said one fastener opening, said tear seam defining and enclosing one securing portion of said knee bolster; and

a fastener for releasably maintaining said knee bolster in the stored position adjacent to the instrument panel;

said one fastener extending through said one fastener opening in said knee bolster and overlying said one securing portion of said knee bolster;

said knee bolster rupturing at said tear seam in response to movement of said knee bolster from the stored position to the blocking position, said one securing portion of said knee bolster remaining secured to the instrument panel by said one fastener when said knee bolster moves from the stored position.

US 6,340,171 B1

AIR BAG MODULE IN A MOTOR VEHICLE

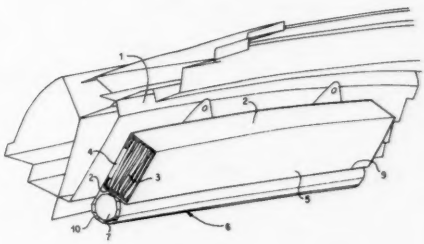
Andreas Hirth, Diehlheim, and Ulrich Tschaeschke, Ehningen, both of Germany, assignors to DaimlerChrysler AG, Stuttgart, Germany

Filed Sep. 18, 1998, Appl. No. 156,356

Claims priority, application Germany, Oct. 29, 1997, 197 47 730; Aug. 27, 1998, 198 38 641

Int. Cl. B60R *21/22*

U.S. Cl. 280—730.2 19 Claims



1. An air bag module in a motor vehicle, comprising:

an elongate container fixed along a roof frame of the vehicle;

a window bag folded in the container which, after a crash signal, is filled with gas, and emerges from the container; and

an energy-absorbing element mounted in or on the container along the roof frame of the vehicle, said energy-absorbing element being deformable upon impact by a passenger.

US 6,340,172 B1

AIRBAG MODULE

Franz Öhlert, Aalen-Hofen, and Hans-Joachim Tietze, Heubach, both of Germany, assignors to TRW Occupant Restraint Systems GmbH & Co. KG, Alfdorf, Germany

PCT No. PCT/EP99/01416, § 371 Date Sep. 5, 2000, § 102(e) Date Sep. 5, 2000, PCT Pub. No. WO99/44864, PCT Pub. Date Sep. 10, 1999

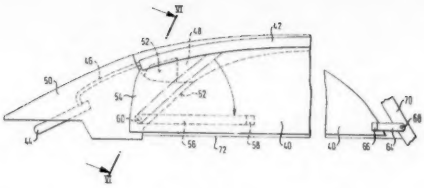
PCT Filed Mar. 4, 1999, Appl. No. 623,537

Claims priority, application Germany, Mar. 6, 1998, 298 03 985 U

Int. Cl. B60R *21/22*

U.S. Cl. 280—730.2 8 Claims

1. A gas bag module for a vehicle occupant restraint system, said gas bag module comprising a gas bag (**40**) having a folded condition and a deployed condition, said gas bag in said deployed condition extending along the inner side of a vehicle side structure; and at least one tensioning means (**56**) connecting the gas bag (**40**) to a C-column (**48**) of the vehicle side structure, said tensioning



means (**56**) being connected to said gas bag (**40**) at a location spaced away from its end assigned to said C-column (**48**), the length of said tensioning mean (**56**) being dimensioned such that the end not connected to said gas bag (**40**), when said gas bag (**40**) is deployed, is located in the region of said gas bag (**40**).

US 6,340,173 B1

THREE-POINT SEAT BELT

Martin Specht, Feldafing, Germany, assignor to Breed Automotive Technology, Inc., Lakeland, Fla.

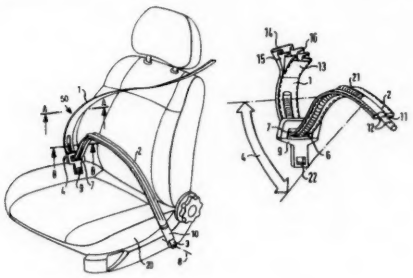
PCT No. PCT/EP99/00677, § 371 Date Aug. 4, 2000, § 102(e) Date Aug. 4, 2000, PCT Pub. No. WO99/39940, PCT Pub. Date Aug. 12, 1999

PCT Filed Feb. 2, 1999, Appl. No. 601,595

Claims priority, application Germany, Feb. 4, 1998, 198 04 365

Int. Cl. B60R *21/18;21/28*

U.S Cl. 280—733 **20 Claims**



1. A three-point seat belt system in a vehicle comprising: a seat belt (**50**) having a shoulder belt part and a pelvic belt part, each of the shoulder belt part and the pelvic belt part including an inflatable interior volume of a determinable cross-section, the seat belt is received through a deflection point of a tongue and the tongue is receivable within a buckle, wherein that part of the seat belt extending on either side of the tongue defines a transition region which extends on one side thereof to the shoulder belt part and on another side thereof to the pelvic belt part;

gas supply means (**10**) for providing gas to inflate the belt;

the seat belt which forms the shoulder and pelvic belt parts (**1**, **2**) and the transition region (**4**) comprises a continuous, inflatable belt interior (**5**); and

a gas channel (**6**) is arranged at least in the interior (**5**) of the transition region (**4**) for forming a continuous gas flow connection between interiors of the shoulder belt part (**1**) and the pelvic belt part (**2**), wherein a gas line extends from the gas supply means and forms the gas channel, the gas line includes openings (**12**) which are closed when the filling gas is supplied to the shoulder belt part (**1**) and are opened when the pelvic belt part (**2**) is filled.

US 6,340,174 B1

AIRBAG APPARATUS

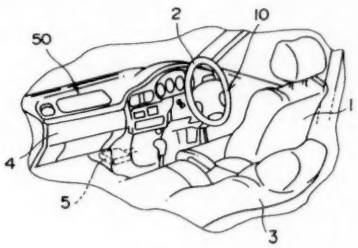
Takeshi Takagi, and Toshihiro Ishikawa, both of Hiroshima-ken, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 26, 2000, Appl. No. 603,346

Claims priority, application Japan, Jul. 12, 1999, 11-198147

Int. Cl. B60R *21/26*

U.S. Cl. 280—736 **13 Claims**



1. An airbag apparatus, which has a plurality of inflators and deploys an airbag by changing activation states of said inflators, the inflators being disposed adjacently in the direction vertical to the deploying direction of the airbag, comprising:

a gas flow deflection member which is provided on the downstream of gas outlets of said inflators and deflects directions of gas flows from said inflators sideward; and

a rectifying member which is inserted between the gas outlets and said gas flow deflection member and uniforms gas flows released from the gas outlets;

wherein said rectifying member has a plurality of openings having different areas, and the area of the opening corresponding to an inactive inflator is larger than the area of the opening corresponding to an active inflator,

wherein said gas flow deflection member has a plurality of openings which are formed on side portions thereof and have different areas, and the area of the opening corresponding to an inactive inflator is larger than the area of the opening corresponding to an active inflator, and

wherein said gas flow deflection member breaks upon activating said plurality of inflators.

US 6,340,175 B1

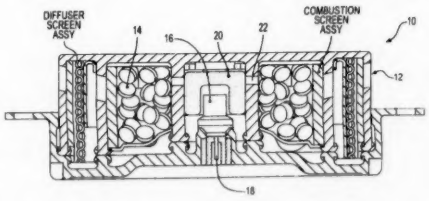
AIR BAG ASSEMBLIES WITH FOAMED ENERGETIC IGNITERS

Craig D. Hughes, Salt Lake City; Daniel W. Doll, North Ogden, both of Utah; Gary K. Lund, Malad, Id., and Dean M. Lester, Brigham City, Utah, assignors to Alliant Techsystems, Inc., Edina, Minn.

Provisional application No. 60/104,267, filed on Oct. 14, 1998. This application Oct. 13, 1999, Appl. No. 417,713.

Int. Cl. B60R *21/28*

U.S. Cl. 280—741 **18 Claims**



1. An air bag assembly comprising:

an inflatable air bag;

a solid gas generant for inflating the inflatable air bag; and

an igniter disposed in operative relation with the solid gas generant for activating the solid gas generant, the igniter comprising a foamed material formed from a composition comprising:

at least one polyfunctional isocyanate;

at least one curable binder having a plurality of functional groups which are reactive with the polyfunctional isocyanate;

at least one fuel source;

at least one oxidizer; and

at least one foaming agent for imparting porosity to the foamed material.

US 6,340,176 B1

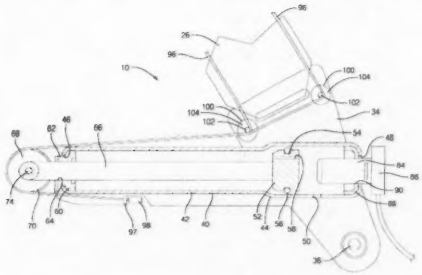
SEAT RESTRAINT TENSIONER

James Lloyd Webber, and Lloyd Walker Rogers, Jr., both of Shelby Township, Mich., assignors to Delphi Technologies, Inc., Troy, Mich.

Filed Mar. 31, 2000, Appl. No. 540,623

Int. Cl. B60R *22/46*

U.S. Cl. 280—806 **20 Claims**



1. A seat restraint tensioner for a seat restraint system in a vehicle comprising:

a housing for operative connection to vehicle structure comprising a piston portion and a gas generation portion extending from said piston portion, said gas generation portion having an inside diameter larger than an inside diameter of said piston portion;

a movable piston disposed in said gas generation portion of said housing and having an outside diameter less than the inside diameter of said gas generation portion, said piston extending longitudinally and having a first longitudinal end facing said gas generation portion and a second longitudinal end facing said piston portion;

a gas generator operatively connected to said gas generation portion of said housing for expelling a gas to move said piston; and

said piston including a passageway extending therethrough to allow the gas to bleed from said second longitudinal end back through said piston to said first longitudinal end as said piston moves in said piston portion of said housing to control a rate of stroke of said piston when the gas is generated to apply a force for pulling-down belt webbing of the seat restraint system.

US 6,340,177 B1

ATV LIQUID TRANSPORT APPARATUS

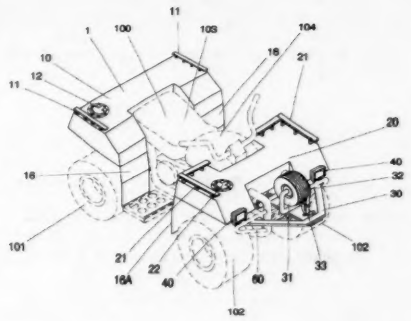
Daniel Dean Granderson, 1266 Bell Rd., Chandler, Ind. 47610, and Christopher Dorman Curry, 5766 Schultz Rd., Elberfeld, Ind. 47613

Provisional application No. 60/157,196, filed on Sep. 30, 1999. This application Sep. 11, 2000, Appl. No. 659,730.

Int. Cl. B60P *3/22*

U.S. Cl. 280—833 **3 Claims**

1. A low profile four wheel all terrain vehicle liquid transport apparatus comprising;



a rear tank,

a forward tank,

a pump, a vehicle gas tank, handlebars,

hoses and fittings connecting said tanks to each other and said pump, and

a dispensing hose,

wherein said rear tank attaches to a frame member of the all terrain vehicle and wraps around a rear seat of said vehicle;

and wherein said forward tank has a recess that complements said vehicle gas tank and handlebars, thereby holding vehicle center of gravity to a minimum.

US 6,340,178 B1

PRINTABLE KIT FOR MAKING AN ORIGINAL HOLDER FOR FLAT OBJECTS

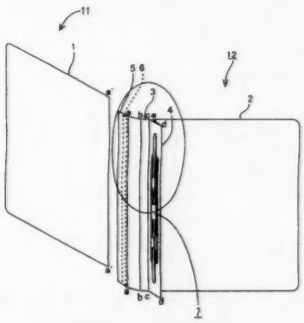
Noriko Nakanishi; Hisayo Yamamoto; Keisuke Niwa; Miho Yokota; Yusuke Nakagawa, and Takao Tsubouchi, all of Nagoya, Japan, assignors to Hisago Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 15, 1999, Appl. No. 418,493

Claims priority, application Japan, Feb. 10, 1999, 11-033301; Jun. 2, 1999, 11-155645

Int. Cl. B42D *1/00*

U.S. Cl. 281—45 **8 Claims**



1. A kit for making a holder, comprising:

a plurality of members for forming a cover having a front panel and a back panel, said plurality of members including a first member defining said front panel;

a holding part for holding flat objects;

a connector part for connecting said plurality of members together, and thus for connecting said front panel and said back panel together;

wherein said first member comprises a substantially flat printable single sheet of generally rectangular form;

wherein at least one of length and width of said single sheet is the same as a standard paper size;

wherein said holding part comprises a fastener, said holding part being fixed on one of said plurality of members not including said first member; and

wherein said first member defines both said front panel and a spine panel.

US 6,340,179 B2

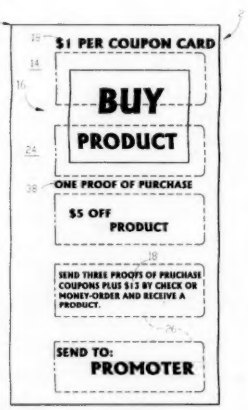
ADVERTISING MATERIALS AND METHOD FOR COOPERATIVE PROMOTIONS

Robert E. Mitchell, 4903 46th Ave., Kenosha, Wis. 53144

Continuation of application No. 09/584,030, filed on May 30, 2000, now abandoned. This application Mar. 5, 2001, Appl. No. 799,447.

Int. Cl. B42D *15/00*

U.S. Cl. 283—67 **7 Claims**



7. A cooperative advertising method, which includes the steps of:

a. providing an advertiser with a product;

b. engaging an advertising agency to advertise said product;

c. engaging a promoter to promote said product;

d. engaging a designer to design a set of advertising materials;

e. providing a set of advertising materials including a predetermined number of coupons and a point-of-purchase advertising display;

f. providing each said coupon with front and back faces and a plurality of break-open windows accessible from said front face; and

g. printing on said front face an advertisement for purchase of said product at a savings greater than the price of said coupon.

US 6,340,180 B1

RELEASABLE COUPLING ASSEMBLY FOR SECURING A VEHICLE FUEL LINE

David M. Wisniewski, 15762 Clair Ct., Macomb Township, Mich. 48042

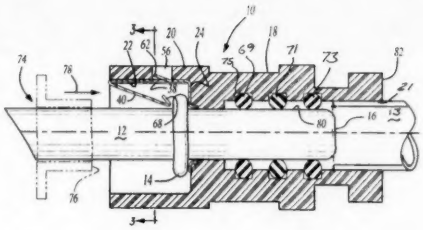
Continuation-in-part of application No. 09/232,791, filed on Jan. 19, 1999. This application Jul. 6, 2000, Appl. No. 610,724.

Int. Cl. F16L *39/00*

U.S. Cl. 285—319 **12 Claims**

1. A releasable coupling assembly comprising:

a first elongate and internally hollowed tubular member, an annular lip projecting from an exterior surface of said first tubular member at a longitudinally spaced location from an exposed end;



a second elongate and internally hollowed tubular member, said second tubular member terminating at one end in a longitudinally extending receptacle portion internally communicable with said second tubular member, said receptacle portion having an annular side wall and an annular end wall defining an open interior and capable of receiving said exposed end of said first tubular member an axially inserted distance and in a fluid sealing manner; a retainer clip including a base and a plurality of circumferentially arrayed and deflectable legs integrally formed with and extending from said base, each of said legs including a longitudinally extending straight portion and a reverse angled bend portion, a circular aperture of sufficient dimension being formed through said base to permit said first tubular member to pass therethrough;

said retainer clip capable of being mounted within said receptacle portion in axially inserting fashion such that, upon subsequent longitudinal insertion of said first tubular member, said annular lip causing an outward deflection of said reverse angled bend portions, said reverse bend portions inwardly deflecting after longitudinal passage of said annular lip and abutting against a shoulder of said annular lip so as to secure said annular lip between said reverse bend portions and said end wall; and each of said straight portions of said retainer clip further including a tang portion secured to said straight portion and extending in a direction towards an exposed end of said receptacle portion, a like plurality of windowed portions being formed through said annular side wall of said receptacle portion at selected circumferential locations corresponding with said tang portions such that, upon insertion of said retainer clip, said tang portions deflect in outwardly angled fashion so as to seat within said corresponding windowed portions, said tang portions preventing disengagement of said retainer clip from within said receptacle portion upon subsequent withdrawal of said first tubular member.

US 6,340,181 B1

BELLMOUTH WITH JOINT BLOCK BODY WITH THE BELLMOUTH AND HAND HOLE WITH THE BELLMOUTH

Hiroyuki Amatsutsu, Osaka, Japan, assignor to Totaku Industries, Inc., Osaka, Japan

Filed Nov. 12, 1999, Appl. No. 438,841

Claims priority, application Japan, Nov. 12, 1998, 10-322464

Int. Cl. F16L *5/00*

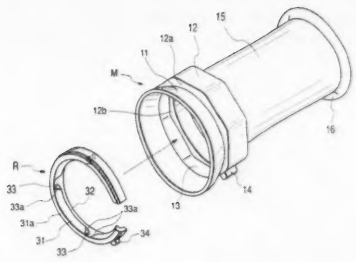
U.S. Cl. 285—321 **18 Claims**

1. A bellmouth with a joint comprising:

a bellmouth main body including:

a cylindrical-shaped portion having a first opening disposed at its one end so as to spread in a trumpet-like shape, and a second opening disposed at its other end and provided with an open guide cylinder capable of connecting a pipe thereto,

a large-diameter cylinder portion formed in a deep portion of said second opening continuous with said open guide cylinder and having a diameter larger than front and rear walls extending in an axial direction of said cylindrical-shaped portion, and an outwardly facing projection disposed in a portion of said large-diameter cylinder portion, and



a separately produced engaging ring having a non-annular or substantially C-like cross-sectional shape, said engaging ring including:

a guiding inclined surface having a large inside diameter on a width direction one end face side thereof and having a small inside diameter on a deep side thereof,

a securing stepped portion formed on the deep side thereof, a plurality of notches respectively formed by cutting out said inclined surface, and

a projection provided on and projected from a portion of the outer peripheral surface of said engaging ring, and

wherein said engaging ring is inserted into an inside portion of said large-diameter cylinder portion of said bellmouth main body such that said large-diameter side end face of said guiding inclined surface is situated on an entrance side of said inside portion, and also such that said projection on the outer peripheral surface of said engaging ring is fitted with the inner surface recessed portion of said outwardly facing projection of said large-diameter cylinder portion.

US 6,340,182 B1

FASTENER FOR PACKAGING

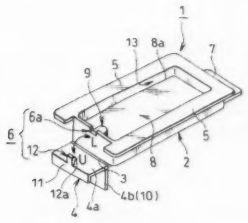
Takashi Kaneda, and Toru Takahashi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 2000, Appl. No. 599,801

Claims priority, application Japan, Jun. 24, 1999, 11-178344

Int. Cl. E05C *19/10;* **B65D** *5/44*

U.S. Cl. 292—102 **7 Claims**



1. A fastener for packaging which connects a first plate body and a second plate body respectively having through holes in a state that said first plate body and said second plate body are overlapped in an up and down direction or a left and right direction with said through holes being aligned with each other comprising:

a base body formed with a thickness which corresponds to said through holes and being insertable into respective through holes,

a first flange portion and a second flange portion which extend in the approximately horizontal direction from one portions of upper and lower sides of an outer surface of said base body, said first flange portion and said second flange portion clamping said first and second plate bodies from front and rear surfaces in a state that said base body is completely inserted into said both through holes,

a movable hook member having an approximately L shape, said movable hook member rotatably connected to a portion of said base body in the vicinity of a lower end edge out of lower end edges of said base body which is disposed apart from said second flange portion by way of a hinge portion, said movable hook member being rotated from a through hole insertion initial position where a horizontal portion of said L shape is moved away from a corresponding side surface of said base body and is directed downwardly to a through hole mounting position where a vertical portion of said L shape is brought into contact with said corresponding side surface of said base body and said horizontal portion of said L shape is brought into contact with a rear surface of said second plate body as a third flange portion in the same manner as said second flange portion, and

lock means provided to corresponding surfaces of said movable hook member and said base body, said lock means capable of locking and holding a state which said movable hook member takes when said movable hook member is rotated to said through hole mounting position by way of said hinge portion.

US 6,340,183 B1

BOLT LOCK FOR MOUNTING IN A THIN WALL

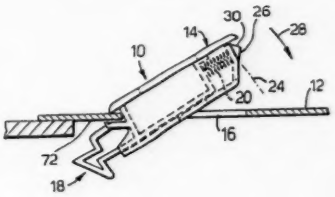
Dieter Ramsauer, Am Neuhauskothen 20, D-42555 Velbert, Germany

Filed Oct. 6, 1999, Appl. No. 413,306

Claims priority, application Germany, Oct. 7, 1998, 298 17 875 U

Int. Cl. E05C *1/10*

U.S. Cl. 292—175 **20 Claims**



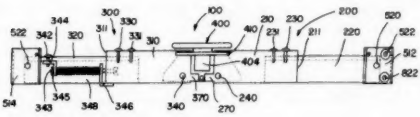
1. A bolt lock for mounting in a thin wall with a rectangular cutout, such as a sheet metal cabinet door, comprising:

a handle plate acting as a first plate which can snap into the rectangular cutout in the thin wall;

said handle plate having a bolt for engaging at one side of the rectangular cutout, that is supported so as to be displaceable against spring force relative to the thin wall; and said bolt being formed by a second plate which is supported so as to be displaceable against the force of a spring in the first plate which is adapted to be held in the thin wall and;

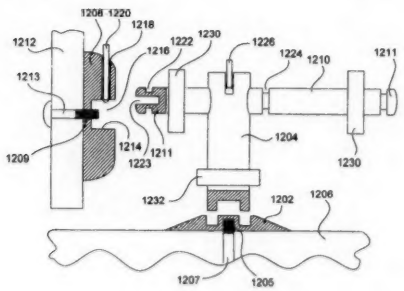
wherein the first plate at the side facing the bolt forms two shoulders which are adapted to extend diagonally upward in the direction of the thin wall from the end faces of the two side walls perpendicular to said side facing the bolt and which are adapted to terminate close to the plane of the thin wall s o as to receive the bolt between the two shoulders in a sliding manner.

US 6,340,184 B1
SECURITY DEVICE FOR SLIDING DOORS AND WINDOWS
Alan Paul Kuzmich, 4 Summerfield Cres., Brampton, Ontario, Canada, L6X-4L3
Filed Jan. 13, 2000, Appl. No. 482,280
Int. Cl. E05C *19/18*
U.S. Cl. 292—259 R **4 Claims**



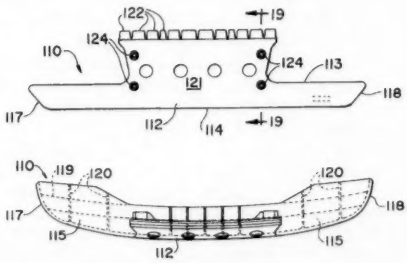
1. An apparatus comprising:
a first telescoping arm;
a second telescoping arm;
a hinge plate rotatably connected to said first telescoping arm and to said second telescoping arm;
a foot pad fixedly engaged to said hinge plate;
a release lever hingedly connected to said foot pad; and
a tab stop fixedly connected to said release lever.

US 6,340,185 B1
MULTI-POSITIONAL ADVANCED DOOR SECURITY LOCK
David Truong, San Jose, Calif., assignor to International Business and Technology Corporation, San Jose, Calif.
Continuation-in-part of application No. 09/286,134, filed on Apr. 1, 1999. This application May 4, 1999, Appl. No. 305,154.
Int. Cl. E05C *17/54*
U.S. Cl. 292—339 **22 Claims**



1. An apparatus for holding a door relative to a floor, comprising;
a door mounting plate adapted to be fixed to the door;
a floor mounting plate adapted to be mounted on the floor, and including a recess; and
a locking assembly that is attached and removed from the floor mounting plate and door mounting plate as a unit, and including a rigid body member adapted to be secured to the floor mounting plate and a locking member adapted to be secured to the door mounting plate, wherein the locking member and the door mounting plate have a cooperating connection means for allowing removable connection from the door mounting plate, and wherein the rigid body member is arranged for placement in the recess of the floor mounting plate so as to provide a secure and removable engagement, and wherein the rigid body member and the locking member have a linear slide means and a stop abutment means for defining a plurality of secure predetermined positions of the door when the assembly is connected to the door mounting plate and the floor mounting plate.

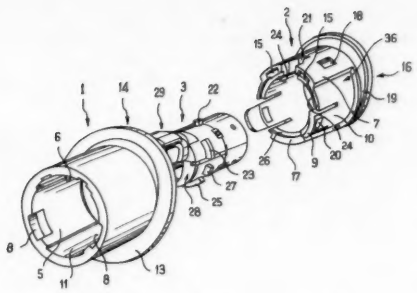
US 6,340,186 B2
INJECTION MOLDED COMPONENTS FOR OFF-ROAD RECREATIONAL AND UTILITY VEHICLES
Mitchell D. Johnson; Michael A. Klein, both of Roseau; Matthew David Parks, Orono; Mark Thomas Karl, Roseau; Patrick Johnson, Winona, all of Minn.; Tim Spahr, Galesville, Wis.; Jeff Sajna, St. Charles, Ill.; Craig Andrews, Brighton, Mich.; Kenneth Terry Higgins, Metamora, Mich.; Robert A. Lowery, Troy, Mich.; Keith D. Ruby, Hopkinsville, Ky.; Alton Mitchell, Princeton, Ky., and Rhonda L. Davis, Hopkinsville, Ky., assignors to Polaris Industries Inc., Minneapolis, Minn.
Division of application No. 08/566,844, filed on Dec. 4, 1995, now Pat. No. 6,016,943, which is a continuation of application No. 08/536,754, filed on Sep. 29, 1995, now abandoned. This application Jan. 24, 2000, Appl. No. 491,092.
Int. Cl. B60R *19/03*
U.S. Cl. 293—120 **26 Claims**



1. An all terrain vehicle comprising:
a chassis carrying a straddle-type seat which is sufficiently narrow to be straddled by a rider;
a pair of front wheels mounted to the chassis, and handlebars connected to the front wheels for steering the vehicle;
a pair of rear wheels mounted to the chassis;
a laterally extending footrest on each side of the chassis;
an engine carried by the chassis, the engine being connected to a drive train supplying motive power to at least some of the wheels; and
an injection molded bumper including:
a fiber-filled plastic resin body, the body including a generally vertically oriented front surface, the front surface having upper and lower peripheral edges, at least a portion of such upper peripheral edge and at least a portion of such lower peripheral edge each having a flange extending generally horizontally away from the front surface, such flanges having thicknesses substantially less than the lengths they extend from the front surface to thereby define generally horizontally extending reinforcing ribs, the front surface also including side peripheral edges each having a flange extending generally away from the front surface and connecting the upper and lower peripheral edge flanges.

US 6,340,187 B1
ACCESSORY FIXING DEVICE
Franck Villiere, Lyons, and Alain Marcellin, Jujurieux, both of France, assignors to Compagnie Plastic Omnium, Lyons, France
Filed Apr. 27, 2000, Appl. No. 559,628
Claims priority, application France, Apr. 30, 1999, 99 05524
Int. Cl. B60R *19/34*
U.S. Cl. 293—155 **21 Claims**

1. An accessory fixing device for fixing an accessory to a side of a bodywork part of a motor vehicle that faces towards the inside of the vehicle and in register with an orifice through said bodywork part, the device comprising:



a jacket suitable for containing the accessory; and

a support suitable for being secured to the bodywork part on the side of said bodywork part that faces towards the inside of the vehicle;

the jacket being suitable for being received inside the support by being inserted from outside of the vehicle through an orifice in the bodywork part while containing the accessory, said jacket also being suitable for being withdrawn from the support from the outside of the vehicle by being extracted through the orifice in the bodywork part while containing the accessory;

wherein the jacket has at least one passage in its thickness enabling a tool to be inserted from the outside of the vehicle, said tool making it possible for the jacket to be released or withdrawn from the support secured to the bodywork part via the orifice while containing the accessory.

US 6,340,188 B1

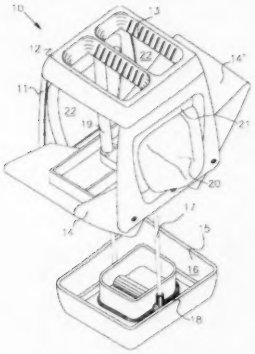
TENNIS BUTLER

Phil Cuti, 6874 Sedgewick Ct., Fort Myers, Fla. 33919

Filed May 11, 2001, Appl. No. 853,012

Int. Cl. A63B *47/02*

U.S. Cl. 294—19.2 **1 Claim**



1. A tennis ball retrieving, storing, and serving apparatus for collecting tennis balls from a playing surface, storing the balls for subsequent use, and conveniently providing the tennis balls for use, said apparatus comprising:

a tennis ball hopper body having a first end wall and a second end wall, side walls, a top portion of said first end wall and a top portion of said second end wall, a first opening and a second opening in each of said side walls, said openings having a spaced apart relationship on opposite sides of said hopper body, said openings having pivotally attached movable sides, said sides having locking means, said locking means having spring loaded releasable catching means,

a base support affixed to said hopper body, said base support having a pair of opening spaces, said base support having a plurality of fingers formed therein for permitting tennis balls to pass into said opening spaces,

a first and second vertical tubular storage means affixed within said hopper body, said tubular storage means having slideably adjustable tubular support means, said support means being formed generally in a "U" shape having a top end and a first leg and a second leg, said first and second legs being pierced by a plurality of holes, said support means being affixed by said top end to said top portion of said end walls, said support means having locking means, said support means being releasably locked within said tubular storage means, said locking means having a toothed rack and a toothed pinion, said rack having a protruding pin, said pin being axially aligned to said holes in said first and said second legs, said pin being reversibly pushed into said holes, and

a base handle and "U" shaped support means, said handle being attached to said "U" shaped support means, said support means being selectively lengthened or shortened fore access to said tennis balls, and for supporting said hopper body for tennis ball retrieval, and shortened for use as a carrying handle, attachment means affixed to said end walls, and

a first and second removably attached soft sided storage pouch attachable to said side walls.

US 6,340,189 B1

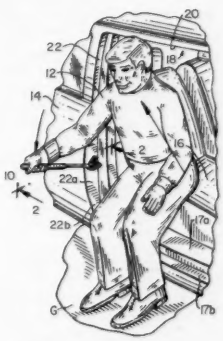
UNIVERSAL DEVICE FOR FACILITATING MOVEMENT INTO AND OUT OF A SEAT

William Pordy, New York, N.Y., assignor to N/Amp Company, Inc., New York, N.Y.

Filed Dec. 17, 1999, Appl. No. 466,252

Int. Cl. B60J *9/00*

U.S. Cl. 296—1.1 **23 Claims**



1. A device for facilitating movement into and out of a seat, comprising an elongate member having a handle at one end suitable for being gripped by an individual, and securement means cooperating with the other end of said elongate member for securing said elongate member to a fixed surface proximate to a seat to enable said elongate member to extend away from the seat and position said handle at a point remote from the seat during use for providing support to the user independently of whether the user pulls on said handle in a direction generally upwards or pushes on said handle in a direction generally downwards, said securement means mounting said elongate member for limited movements within a plane substantially parallel to the fixed surface to at least one operative position most convenient to the user when pulling or pushing on said handle.

US 6,340,190 B1

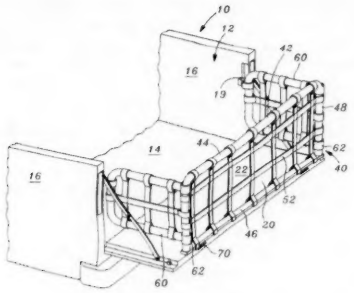
TAILGATE ATTACHMENT FOR EXTENDING THE CARGO SPACE OF A VEHICLE

Robert Rosebrugh, 128 Greenmeadow Ave., Newbury Park, Calif. 91320, and Ward Olson, 2812 Via Barri, Palos Verdes, Calif. 92266

Provisional application No. 60/132,457, filed on May 4, 1999. This application Feb. 28, 2000, Appl. No. 514,783.

Int. Cl. B60P *1/00*

U.S. Cl. 296—26.11 **2 Claims**



1. A tailgate attachment for a vehicle having a cargo space, the cargo space being defined by a bed, upright sidewalls and a tailgate, the tailgate having an inside surface which faces the cargo space when the tailgate is at a closed upright position and which extends substantially horizontally to the rear of the bed when the tailgate is at an open position, the tailgate further having a top edge which is uppermost when the tailgate is at the closed upright position, the tailgate attachment comprising:

a back panel and a pair of side panels having configurations adapted to form a rearward extension of the cargo space, each of the side panels being pivotally coupled to one of a pair of side members of the back panel enabling the side panels to be pivoted from a generally parallel relationship with the back panel to a generally perpendicular relationship with the back panel;

a first securing element adapted to be attached to the inside surface of the tailgate, the first securing element having a first securing element upper surface that is generally parallel to the inside surface of the tailgate when the first securing element is attached to the tailgate, the first securing element further including a first securing element pivot point that extends upwardly from the first securing element upper surface;

an intermediate rotating member that includes an elongate body portion that separates first and second pivot points of the intermediate rotating member;

a second securing element that is fixedly attached to the tailgate attachment, the second securing element having a second securing element pivot point;

a first pivot pin that rotatably engages the first securing element pivot point to the first pivot point such that the elongate body portion of the intermediate rotating member can rotate approximately 180 degrees about the first pivot pin, the rotation of the elongate body being constrained by the first securing element upper surface; and

a second pivot pin that rotatably engages the second securing element pivot point to the second pivot point such that the back panel may be rotated approximately 270 degrees from the inside surface of the tailgate.

US 6,340,191 B1

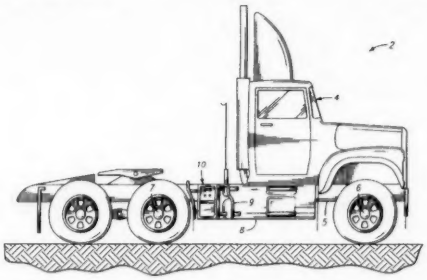
TRUCK STORAGE BOX

Joseph Brady, Otis Orchards, Wash., assignor to Merritt Equipment Company, Henderson, Colo.

Provisional application No. 60/118,950, filed on Feb. 5, 1999. This application Jan. 10, 2000, Appl. No. 480,080.

Int. Cl. B60R *3/00*

U.S. Cl. 296—37.6 **3 Claims**



1. A truck storage box affixed to a truck chassis between the front and rear axles of the truck, wherein the storage box comprises an access door, the access door comprising a first aerodynamic body panel, and wherein the first aerodynamic body panel is overlapped on one end by a second adjacent body panel such that the access door of the storage box can be opened without substantial interference between the first and second body panels, and further wherein the access door further comprises at least one step affixed to the door through a cutout in the aerodynamic body panel.

US 6,340,192 B2

SYSTEM AND METHOD FOR REMOVING LIQUID FROM REAR WINDOW OF VEHICLE

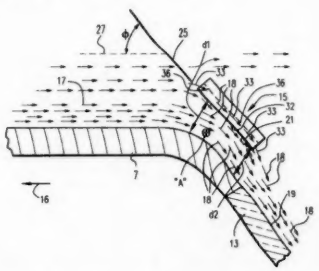
Ryan E. Pike, Rochester Hills, and Vijayen S. Veerasamy, Farmington Hills, both of Mich., assignors to Guardian Industries Corporation, Auburn Hills, Mich.

Continuation of application No. 09/512,798, filed on Feb. 25, 2000, now Pat. No. 6,273,488, which is a continuation-in-part of application No. 09/303,548, filed on May 3, 1999, now Pat. No. 6,261,693, and a continuation-in-part of application No. 09/442,885, filed on Nov. 18, 1999. This application May 14, 2001, Appl. No. 853,601.

This patent is subject to a terminal disclaimer.

Int. Cl. B60J *1/20*

U.S. Cl. 296—91 **4 Claims**

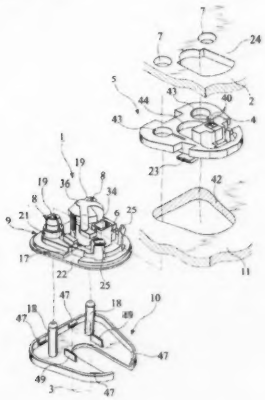


1. A system for enabling rain water to be removed from an exterior surface of a backlite of a vehicle, said system comprising:

an air deflector for redirecting air from flowing in a first direction across a surface of a vehicle to a second direction in which the air flows downwardly toward and/or across the backlite, and for causing at least a portion of the air flowing in the second direction to flow faster than air in the first direction; and

wherein said backlite includes a substrate with a hydrophobic coating provided thereon, said hydrophobic coating having an initial contact angle (θ) of at least about 80 degrees.

US 6,340,193 B1
BRACKET FOR INSTALLATIONS OF SUBSIDIARY APPLIANCE ONTO VEHICLE BODY
Masahiro Sawayanagi, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Nov. 6, 2000, Appl. No. 705,830
Claims priority, application Japan, Nov. 10, 1999, 11-319662; Nov. 10, 1999, 11-319692; Nov. 10, 1999, 11-319698
Int. Cl. B60J *3/00*
U.S. Cl. 296—97.9 **11 Claims**



1. A bracket for installing a subsidiary appliance onto a vehicle panel comprising:

a first bracket having a first connector;

a second bracket having a second connector which is coupled with said first connector when the second bracket is united with said first bracket and cylindrical grommet screws which are inserted into bracket mounting holes formed in said vehicle panel and engaged with the vehicle panel; and

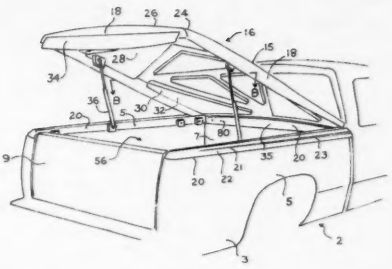
a cover to be mounted on said second bracket on an opposite side to a side with which said first bracket is to be united,

wherein said first bracket has locking pieces each having a lock pawl and said second bracket contains hole portions in which said locking piece is to be inserted, so that a flexible space is formed with a lock arm having an engaging convex portion for engaging with said locking piece facing the hole portion, while said lock pawl engages with said engaging convex portion so that said first bracket is united with said second bracket.

US 6,340,194 B1
HARD TRUCK BED COVER
Scott A. W. Muirhead, Uniontown, and Kent E. Buckingham, Washington, both of Pa., assignors to STK, LLC, Uniontown, Pa.
Provisional application No. 60/140,741, filed on Jun. 25, 1999. This application May 15, 2000, Appl. No. 571,043.
Int. Cl. B60P *7/02*
U.S. Cl. 296—100.06 **36 Claims**

1. A rigid cover assembly for an open bed of a pickup truck, the rigid cover comprising:

A first sheet of heat deformable plastic having a slightly crowned surface and four depending walls defining a perimeter lip;



A second sheet of heat deformable plastic having a slightly crowned surface and four depending walls defining a perimeter lip;

Whereupon the slightly crowned surface and depending walls of the second sheet are included depending structures, which depending structures comprise:

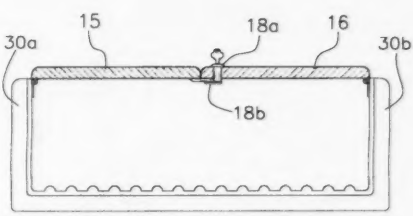
a perimeter ledge supporting a gasket interfacing with a top surface margin of the open bed of said pickup truck,

a plurality of depending ribs arrayed to rigidify said slightly crowned surface, and

opposed prop supports that depend below a margin defined by the perimeter lip;

Wherein portions of the slightly crowned surfaces and the four depending walls of said first and second sheets achieve interfacial contact when deformed to produce said rigid cover.

US 6,340,195 B1
TRUCKBOX COVER AND SIDEWALL EXTENSION ATTACHMENT
Arizona Hall, 4486 San Fransico St., St Louis, Mo. 63115, and John Henry Hall, 1937 Madison St. P.O. Box 1498, Gary, Ind. 46407
Filed Aug. 26, 1999, Appl. No. 383,669
Int. Cl. B60P *7/02*
U.S. Cl. 296—100.07 **1 Claim**



1. A truckbox cover and sidewall extension attachment comprising:

a first wall member having a bottom side, flap member securely attached to said first wall member and extending along and outwardly from a first longitudinal edge of said first wall member, said first wall member being hingedly attached to a first sidewall of a pickup truck box;

a second wall member having a bottom side and being hingedly attached to a second sidewall of a pickup truck box, said first and second wall members partially overlapping a front wall and a tailgate of a truck box wheel said wall members are in a closed position, said flap member being thin and flat and having a width capable of extending partially beneath a first longitudinal edge of said second wall member when both said first and second wall members are in a closed position upon a truck box,

a means for bracing said first and second wall members in upright positions upon respective sidewalls of a pickup truck box for essentially extending upwardly the sidewalls of a pickup truck box, and including a plurality of brackets securely attached to said first and second wall members and to a front wall of a truck box, and further including a pair of telescoping brace members securely mounted to said brackets, one of said brackets being securely attached to said bottom side of said first wall member and another one of said brackets being securely attached to said bottom side of said second wall member, one of said telescoping brace members having an end hingedly connected to said bracket which is securely attached to said first wall member, and the other of said telescoping brace members having an end hingedly connected to said bracket which is secretly attached to said second wall member, each of said telescoping brace members including an air-filled cylinder and a piston movably extended in said cylinder for essentially locking said first and second wall members in upright positions upon it truckbox, said means for bracing being positioned near a first end portion of each of the wall members; and

a means for lockably latching said first and second walls members together in a closed position, said means for locking being positioned near a second end portion of each of the wall members.

US 6,340,196 B1

MOTOR-VEHICLE CONVERTIBLE TOP

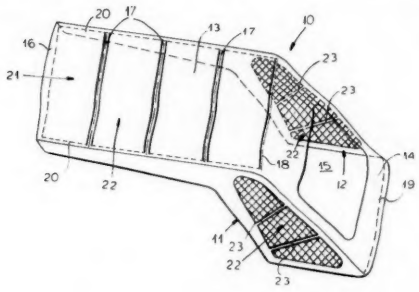
Martin Windpassinger, Hauzenberg, and Manfred Kasparak, Neureichenau, both of Germany, assignors to Parat Automotive Schonenbach GmbH + Co. KG, Remscheid, Germany

Filed Oct. 13, 2000, Appl. No. 688,265

Claims priority, application Germany, Oct. 15, 1999, 199 49 888

Int. Cl. B60J *7/12*

U.S. Cl. 296—107.11 **12 Claims**



1. A motor-vehicle convertible top comprising:

a flexible and waterproof outer layer defining a roof having edges and an inner surface, a pair of sides joined at the edges to the roof, and a rear wall extending between the sides and a rear edge of the roof;

a heat- and sound-insulating inner layer of a foamable plastic bonded directly to the inner surface of the roof and inner surfaces of the sides;

a pair of reinforcing bands extending along the edges and fixed to the layers;

a plurality of crosswise rigid reinforcing struts extending between the bands and secured to the inner layer; and

plastic formations molded on the bands and engaged around the struts.

US 6,340,197 B1

INSULATION-LINED MOTOR-VEHICLE CONVERTIBLE TOP WITH INTEGRAL CONNECTING ELEMENTS

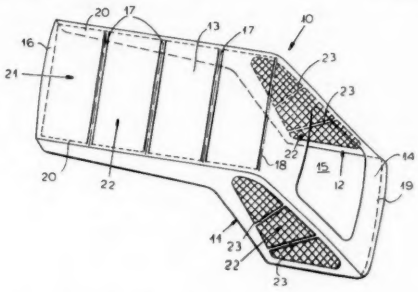
Martin Windpassinger, Hauzenberg, Germany, assignor to Parat Automotive Schonenbach GmbH + Co. KG, Remscheid, Germany

Filed Oct. 13, 2000, Appl. No. 688,954

Claims priority, application Germany, Oct. 15, 1999, 199 49 878

Int. Cl. B60J *7/12*

U.S. Cl. 296—107.11 **22 Claims**



1. A motor-vehicle convertible top comprising:

a foldable and waterproof cover having an inner face;

a framework having a plurality of rigid struts juxtaposed with the inner face;

a foam-plastic layer unitarily bonded to the inner face;

connecting elements integrally imbedded in the foam-plastic layer and secured to the struts, whereby the framework is connected via the elements to the cover.

US 6,340,198 B1

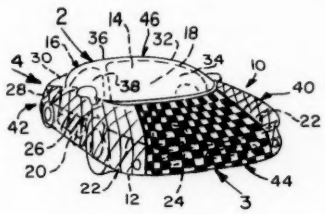
MULTI-PART AND MULTI-FUNCTION COVER FOR SELECTIVE PORTIONS OF A VEHICLE

Graciela Benites, and Miguel Carbo, both of P.O. Box 7126, Aurora, Ill. 60507

Filed Mar. 13, 2000, Appl. No. 524,585

Int. Cl. B60J *11/00*

U.S. Cl. 296—136 **11 Claims**



1. A multi-part and multi-function cover for selective portions of a vehicle, wherein the vehicle has an interior, a pair of rocker panels, a pair of front fenders, a hood, at least one door, a pair of rear quarter panels, a trunk lid, a roof, a front windshield, a rear windshield, and at least one side window, said cover comprising:

A) a cover member for covering the selective portions of the vehicle; and

B) fastening apparatus associated with said cover member for fastening said cover member on the selective portions of the vehicle, wherein said cover member comprises:

i) a lower portion for covering the pair of front fenders of the vehicle, the hood of the vehicle, the at least one door of the vehicle, the pair of rear quarter panels of the vehicle, and the trunk lid of the vehicle; and

ii) an upper portion that is independent from said lower portion of said cover member for covering the roof of the vehicle, the front windshield of the vehicle, the rear windshield of the vehicle, and when the vehicle is a convertible and the roof of the vehicle is down, said upper portion of said cover member also functioning as a tonneau cover for protecting the interior of the vehicle, wherein said lower portion of said cover member is substantially crescent-shaped and has:

a) a body for covering the hood of the vehicle, the pair of front fenders of the vehicle, the at least one door of the vehicle, and the pair of rear quarter panels of the vehicle; and

b) a pair of ends that taper from said body of said lower portion of said cover member for covering the trunk lid of the vehicle.

US 6,340,199 B1

ELECTRICITY FEEDING DEVICE FOR VEHICULAR SLIDE DOORS

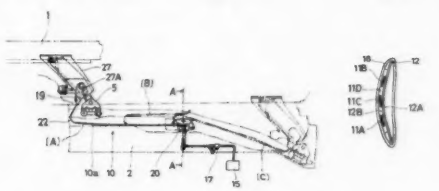
Ryoichi Fukumoto, Nagoya; Katsuhisa Yamada, Toyota; Masao Ohhashi, Kariya; Shintaro Suzuki, Kasugai, and Seiichi Suzuki, Aichi-ken, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 16, 1999, Appl. No. 461,234

Claims priority, application Japan, Dec. 16, 1998, 10-357090

Int. Cl. B60J *5/06*

U.S. Cl. 296—155 **15 Claims**



1. An electricity feeding device for a vehicle slide door mounted on a side wall of a vehicle body comprising;

a flexible conductive portion having a curved portion, the curved portion being moved in conjunction with movement of the slide door for opening and closing an opening area formed in the side wall of the vehicle body;

the flexible conductive portion having a wire providing electrical connection between components in the slide door and the vehicle body, and an insulating member covering the wire;

a belt made of steel and extending along the insulating member with the insulating member being supported on the belt; and

a cover member covering the belt and the insulating member covering the wire so that the cover member is movable relative to the insulating member, and the belt being movable relative to the insulating member.

US 6,340,200 B1

FRONT PILLAR IMPACT ABSORBING STRUCTURE

Kouji Enomoto, and Suguru Yoshida, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 2000, Appl. No. 711,535

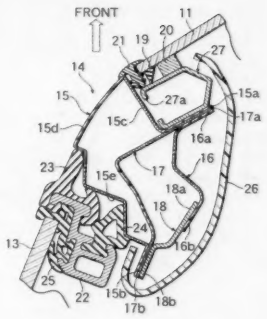
Claims priority, application Japan, Nov. 19, 1999, 11-329322

Int. Cl. B60J *7/00*

U.S. Cl. 296—189 **6 Claims**

1. A front pillar impact absorbing assembly for absorbing an impact applied to a windshield by a front pillar, comprising:

a pillar outer having a flange portion connected with a pillar inner on a passenger compartment side of a peripheral portion of said windshield; and



a plastic deformable member disposed on a front face of said flange portion such as to support said peripheral portion of said windshield,

wherein said plastic deformable member has a cross section defining a space inside thereof.

US 6,340,201 B1

ANTI-VIBRATION SUPPORT FOR CONSTRUCTION MACHINE CAB

Takeshi Higuchi, Tsuchiura, Japan, assignor to Hitachi Construction Machinery Co., Ltd.

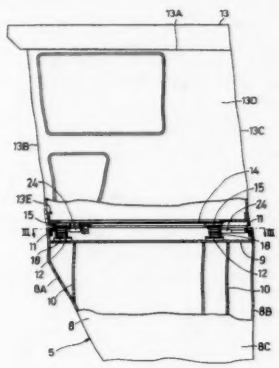
PCT No. PCT/JP99/03069, § 371 Date Feb. 4, 2000, § 102(e) Date Feb. 4, 2000, PCT Pub. No. WO99/66134, PCT Pub. Date Dec. 23, 1999

PCT Filed Jun. 9, 1999, Appl. No. 485,126

Claims priority, application Japan, Jun. 15, 1998, 10-183369

Int. Cl. B62D *33/06*

U.S. Cl. 296—190.07 ***11 Claims***



1. A construction machine having a support frame, an operator's cab mounted on said frame and internally defining an operating room, and four anti-vibrational mounts located in four corner portions between said frame and cab to support the cab on the frame in a vibration damped state, wherein:

each of said anti-vibrational mounts comprises a laminated rubber body having relatively high rigidity against vibration in a vertical direction and relatively low rigidity against vibration in a horizontal direction; and wherein

said construction machine further comprises four vibration attenuating devices located in said four corner

said construction machine further comprises four vibration attenuating devices located in said four corner portions between said frame and cab and in cooperative positions

relative to said anti-vibrational mounts to attenuate horizontal vibrations transmitted to said cab.

US 6,340,202 B1

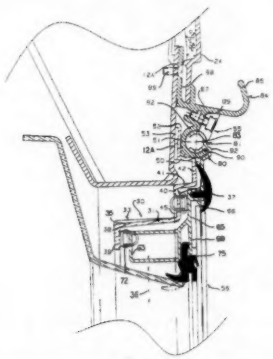
WINDOW STRUCTURE FOR MASS TRANSIT VEHICLE

William H. Stanton; Gary Blaine Penelton, and Glenn Campbell, all of Winnipeg, Canada, assignors to New Flyer Industries Limited, Winnipeg, Canada

Filed Feb. 3, 2000, Appl. No. 496,685

Int. Cl. B60R *27/00*

U.S. Cl. 296—201 **15 Claims**



1. A public transit vehicle comprising:

a vehicle body having:

a roof,

two side walls each extending longitudinally of the vehicle,

a vehicle floor connected to the side walls and spanning therebetween;

each side wall including a plurality of window openings at spaced positions longitudinally of the side wall each containing a respective window;

each window including a rectangular window pan fastened to the side wall and carried thereby so surround the window opening defining a window plane parallel to the side wall;

the window pan being defined by four side pan members each along a respective side of the window opening, each pan member being shaped in cross section to define a web portion generally at right angles to the window plane, an exterior flange portion connected to the web portion at an exterior edge thereof and extending generally at right angles to the web portion outwardly from the window opening and an interior flange portion connected to the web portion at an interior edge thereof and extending generally at right angles to the web portion inwardly into the window opening;

each window including a rectangular window pane structure having a window pane in the window plane and a surrounding pane frame member attached to the pane and defined by four frame members each along a respective side of the pane and connected at corners of the frame;

the window pane structure being mounted in a closed position thereof in the window pan with each frame member including at least one sealing element butting against a respective one of the side pan members of the window pan;

wherein there is provided a support member for the pane structure along a top one of the pan members, the support member defining a hinge allowing pivotal movement of the pane structure about a horizontal axis from the closed position to an open position, the hinge being arranged above the web portion of the top one of the pan members such that the frame members of the pane structure are inserted into the window pan in the closed position and pivot out of the pan in the open position.

US 6,340,203 B2

FRONT PILLAR FOR A VEHICLE

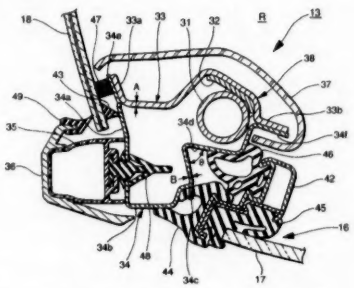
Kouji Enomoto, and Suguru Yoshida, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 2000, Appl. No. 728,118

Claims priority, application Japan, Dec. 3, 1999, 11-345532

Int. Cl. B60J *7/00*

U.S. Cl. 296—203.02 **10 Claims**



1. A front pillar assembly for a vehicle, comprising:

an inner panel disposed on a passenger compartment side; and

an outer panel joined to said inner panel so as to form a tube, said outer panel being made thinner than said inner panel, said outer panel including:

a front face substantially parallel with a windshield;

an external side face which is formed by bending said front face in such a manner as to be substantially parallel with a window glass of a front door; and

a rear face which is formed by bending said external side face toward the passenger compartment such as to face said front door, said rear face defining at least one valley groove which is hollowed toward the interior of said tube.

US 6,340,204 B1

MOTOR VEHICLE ROOF WITH INSERTED ROOF MODULE AND INSTALLATION PROCESS FOR IT

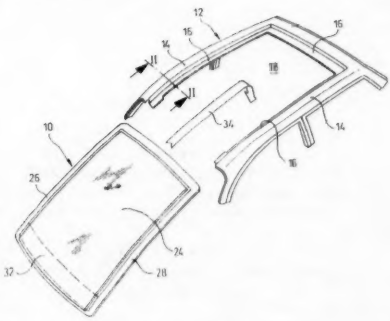
Wolfgang Seifert, Germering, Germany, assignor to Webasto Vehicle Systems International GmbH, Stockdorf, Germany

Filed Apr. 28, 2000, Appl. No. 560,146

Claims priority, application Germany, Apr. 29, 1999, 199 19 505

Int. Cl. B60J *7/00*

U.S. Cl. 296—216.07 **8 Claims**



1. Motor vehicle roof with a roof opening within a roof frame having at least one open end and comprising two lateral side members of the vehicle, a roof module which covers the roof opening, wherein the roof module has a rigid top part which is

affixed on top of each of the two lateral side members by a bead of an adhesive material and a bottom part which fits under each side member and is elastically deflectable in a heightwise direction of the roof by an amount greater than a height of the adhesive material, the roof module being insertable into the open end of the roof frame to between the lateral side members from one of front and rear ends of the lateral side members with a mounting portion of said rigid top part above and out of contact with the adhesive on lateral side members and with said deflectable bottom part under each side member.

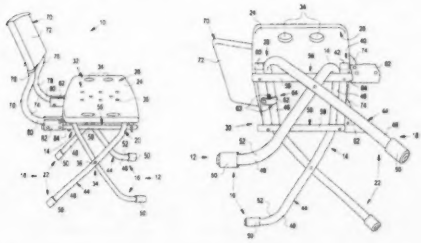
US 6,340,205 B1
FOLDABLE SEATING DEVICE

Joseph Battiston, Chester, Va., assignor to Tubular Fabricators Industry, Petersburg, Va.

Continuation of application No. 08/906,729, filed on Aug. 5, 1997, now abandoned. This application Aug. 2, 1999, Appl. No. 366,010.

Int. Cl. A47C *4/00*

U.S. Cl. 297—24 **37 Claims**



1. A foldable bench comprising:

a first leg means having a top portion and a bottom portion;

a second leg means having a top portion and a bottom portion;

a seat having a top surface, a bottom surface, and attachment means for slidably attaching said top portion of said first leg means below said top surface of said seat and pivotally attaching said top portion of said second leg means below said top surface of said seat, so that said attachment means keeps said top portion of each of said leg means attached to said seat so that said top portion of each of said leg means does not separate from said seat when said first leg means pivots and said second leg means slides;

a backrest connected to the seat;

wherein said seat allows said first and second leg means to move between a first resting position and a second resting position;

wherein, in said first resting position, said first and second leg means are substantially disposed adjacent said seat; and

wherein, in said second resting position, said first and second leg means generally crisscross each other and generally extend away from said seat.

US 6,340,206 B1
VEHICLE SEAT

Tommy Andersson, Växjo, Sweden, and Timothy Barnett, Ballyclare, United Kingdom, assignors to Autoliv Development AB, Sweden

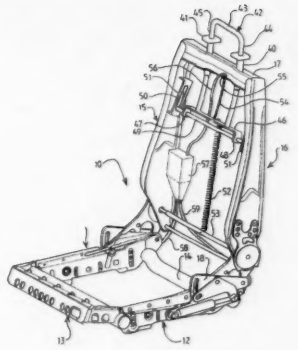
PCT No. PCT/SE98/01577, § 371 Date Aug. 22, 2000, § 102(e) Date Aug. 22, 2000, PCT Pub. No. WO99/12764, PCT Pub. Date Mar. 18, 1999

PCT Filed Sep. 7, 1998, Appl. No. 508,374

Claims priority, application Germany, Sep. 10, 1997, 9719265

Int. Cl. B60N *2/42*

U.S. Cl. 297—216.14 **6 Claims**



1. A vehicle seat, the seat comprising a squab and a back, the back being mounted for pivotal movement, relative to the squab, about a predetermined pivotal axis, the back having a head-rest and a frame supporting the head-rest, said frame being movable between a lower position and an upper position, the head-rest carried by the frame being located a greater distance from the top of the back of the seat when the frame is in the upper position, and means for moving the frame from the lower position to the upper position in response to rearward pivotal movement of the back of the seat about the predetermined pivotal axis.

US 6,340,207 B1
TWO PLATFORM MOTION SEAT

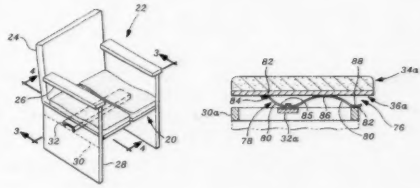
Stephen T. Brightbill, Vista, and David W. Flesner, San Diego, both of Calif., assignors to Dual Seat Technologies, Del Mar, Calif.

Division of application No. 08/940,921, filed on Sep. 30, 1997, now Pat. No. 5,913,568. This application May 5, 1999, Appl. No. 305,837.

This patent is subject to a terminal disclaimer.

Int. Cl. A47C *3/02;* **A47D** *13/10*

U.S. Cl. 297—258.1 **7 Claims**



1. A seat comprising:

A pair of seating bodies, at least one motion mechanism providing the seating bodies with a rocking motion and a vertical motion including a wave-shaped spring having a first end portion adjacent a concave trough portion adjacent a crest portion adjacent a second end portion, at least one of said first end portion, said trough portion, said crest portion, and said second end portion bearing against at least one of said pair of seating bodies, each seating body having a predetermined neutral angle based on a particular orientation of the seat, wherein the neutral angle is the angle with respect to a horizontal axis orthogonal to the earth's gravity vectors that the seating body resides at when no external forces are present on the seating body.

US 6,340,208 B1

MOTOR VEHICLE SEAT, IN PARTICULAR BACK SEAT

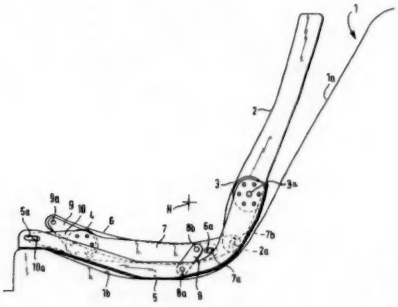
Klaus-Dieter Habedank, Stadthagen, Germany, assignor to Bertrand Faure Sitztechnik GmbH & Co. KG, Stadthagen, Germany

Filed Dec. 17, 1998, Appl. No. 213,586

Claims priority, application Germany, Dec. 18, 1997, 197 56 272

Int. Cl. B60N *2/00*

U.S. Cl. 297—322 **10 Claims**



1. A seat for a motor vehicle comprising:

a seat frame;

a back rest having a forward portion and a rear portion, wherein the back rest is pivotably coupled to the seat frame about a first horizontal pivot, and the first horizontal pivot is located at the lower end on the back rest;

a tilt adjustment device for tilting the back rest about a horizontal tilt axis, wherein the horizontal tilt axis is located at height greater than the first horizontal pivot, and the tilt adjustment device has a first hinge portion secured relative to the back rest and a second hinge portion that is capable of being connected to a motor vehicle body,

wherein the first horizontal pivot rotates about the horizontal tilt axis in response to the tilting movement of the back rest, and

wherein a forward portion of the seat frame is capable of being coupled to the motor vehicle body such that the height and longitudinal position of the seat frame are adjustable, and the first horizontal pivot is also adjustable in height and longitudinal position.

US 6,340,209 B1

VEHICLE BODY ACCELERATION SENSOR FOR SEAT BELTS

Kazuo Yamamoto; Yoshito Hashimoto, and Masanao Fukunaga, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

PCT No. PCT/JP98/04123, § 371 Date Mar. 10, 2000, § 102(e) Date Mar. 10, 2000, PCT Pub. No. WO99/14084, PCT Pub. Date Mar. 25, 1999

PCT Filed Sep. 11, 1998, Appl. No. 508,453

Claims priority, application Japan, Sep. 12, 1997, 9-248759; Oct. 16, 1997, 9-283886; Dec. 10, 1997, 9-340242; Dec. 24, 1997, 9-355344; Dec. 24, 1997, 9-355345; Mar. 6, 1998, 10-65602; Mar. 16, 1998, 10-65603; Apr. 6, 1998, 10-93390

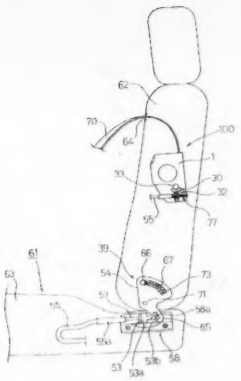
Int. Cl. B60R *21/00*

U.S. Cl. 297—478 **18 Claims**

5. A vehicle body acceleration sensor for use with a seat belt comprising:

a sensor case which is movably supported by a retractor base attached to a backrest of a vehicle reclining seat;

a sensor arm which is pivotally supported by one of the sensor case and the retractor base in such a way as to shift between a first position where lock means is activated so as to prevent rotation of a take-up shaft, around which a webbing is wound, in a direction in which the webbing is drawn-out and a second position where the lock means is deactivated;



an inertial body which moves in relation to an inertial body support surface of the sensor case upon receipt of a velocity change greater than a predetermined magnitude to thereby move the sensor arm to the first position; and

transmission means for pivoting the sensor case in synchronization with reclining action of the backrest in such a way as to retain the inertial body support surface in an appropriate orientation regardless of reclining angle of the backrest, wherein the lock means is activated by means of movement of the inertial body when an acceleration of predetermined magnitude acts on the vehicle body; wherein the transmission means comprises:

angle sensing means for sensing the reclining angle of the backrest by detection of relative turning movement between a member which is provided on the backrest and pivots in conjunction with a backrest and a member which is provided in a seat portion; and

a seat pivot shaft placed in line with the seat reclining pivot of the backrest and a pivot shaft of the angle sensing means being provided concentrically and in line with the seat reclining pivot of the backrest, the pivot shafts having irregularities which mesh with each other.

US 6,340,210 B1

WHEEL FOR VEHICLE

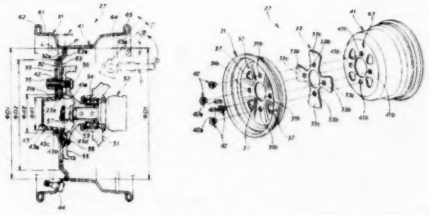
Akio Handa; Yuji Maki, both of Wako; Shoji Suzuki; Kiyoshi Amaki, both of Osaka, and Junichi Sato, Kaga Ishikawa Pref., all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo; Zeniya Aluminum Engineering, Limited, Osaka, and Daido Kogyo Co., Ltd, Ishikawa Pref., all of Japan

Filed Mar. 3, 2000, Appl. No. 517,768

Claims priority, application Japan, Mar. 4, 1999, 11-057271; Feb. 17, 2000, 12-040229

Int. Cl. B60B *3/10;3/00*

U.S. Cl. 301—64.4 **5 Claims**



1. A wheel for a vehicle, said vehicle having an axle with a hub connected thereto, said wheel comprising:

first and second wheel halves joined together, each of said wheel halves having a disk portion and a rim continuing from said disk portion; and

a center plate inter-posed between said disk portions of said wheel halves, said center plate having a first diameter smaller than an outside second diameter of each of said disk portions, one of said first and second wheel halves having an outer curved portion and the other of said first and second wheel halves having an inner curved portion between said first diameter and said rims,

said first wheel half, said second wheel half and said center plate being fixedly connected together and to said hub with a plurality of washers, bolts, and nuts;

said first and second wheel halves being fixedly connected together with a weld, said weld due to said outer and inner curved portions being offset inwardly toward said vehicle relative to a straight line passing vertically through said center plate when said wheel is mounted on said vehicle.

US 6,340,211 B1

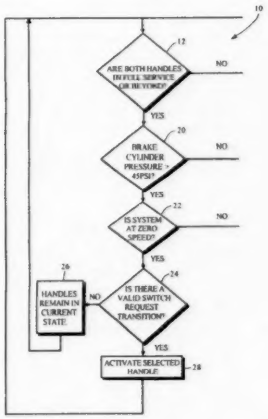
DUAL STATION AIR BRAKE CONTROL

Michael J. Joyce, Jr., Jefferson Boro, Pa.; Charles L. Crawford, Baldwinsville, N.Y.; Daniel J. Wolf, Pittsburgh, Pa.; David J. Pcsolar, Irwin, Pa., and Winslow K. Duff, Export, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Sep. 3, 1997, Appl. No. 922,426

Int. Cl. B60T *8/32*

U.S. Cl. 303—191 **11 Claims**



1. A method of changing between two operator stations located in a cab of a locomotive for controlling brakes of such locomotive and a train of railway cars connected to such locomotive, said stations each having brake valve handles and an associated selector switch, with each of said switches being operatively connected to a brake control computer, the method comprising:

stopping the train if the train is in motion

determining that said brakes are set;

selecting one of the operator stations as an active station for braking the train while the other station is chosen to be inactive,

directing signals from the selector switches at the operator stations to the computer, said signals indicating which one of the two stations is active and inactive, and

providing the computer with software that accepts a valid transition to the station selected by an operator as the active station,

the step of selecting the active station including

manually operating a switching device operatively connected between the computer and said selector switches said manual operation informing the computer of the stations selected respectively for active and inactive status,

with said switching device being connected for radio communication between the computer and said selector switches.

US 6,340,212 B1

APPARATUS FOR HOLDING AN INPUT UNIT

Max Beiss, Ismaning, and Joseph Dietl, Unterhaching, both of Germany, assignors to Océ Printing Systems GmbH, Poing, Germany

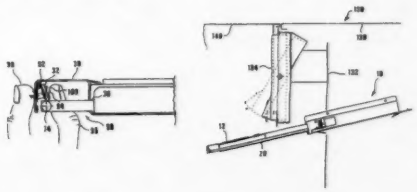
PCT No. PCT/DE97/02442, § 371 Date Jun. 18, 1999, § 102(e) Date Jun. 18, 1999, PCT Pub. No. WO98/18305, PCT Pub. Date Apr. 30, 1998

PCT Filed Oct. 21, 1997, Appl. No. 297,158

Claims priority, application Germany, Oct. 22, 1996, 196 43 633

Int. Cl. A47B *81/00*

U.S. Cl. 312—223.3 **16 Claims**



1. An apparatus comprising a cabinet, a device selected from a printer and copier being positioned in the cabinet, said device having an input unit for providing control data to the device, said apparatus having means for supporting the input unit for movement along a plane between an idle position inside the cabinet and an operating position with the input unit extending outside of the cabinet for actuation, said means including a base plate for receiving the input unit, said plate having at least one guide element being movably housed by a receptacle element being arranged on the device to be inclined to a horizontal so that the plane of movement of the input unit is downwardly inclined from the idle position to the operating position.

US 6,340,213 B1

COLLAPSIBLE ASTRONOMY STATION

Lewis R. Calobrisi, Jr., 192 Audwin Dr., Islip Terrace, N.Y. 11752

Filed Apr. 24, 2000, Appl. No. 558,720

Int. Cl. A47B *96/18*

U.S. Cl. 312—244 **17 Claims**

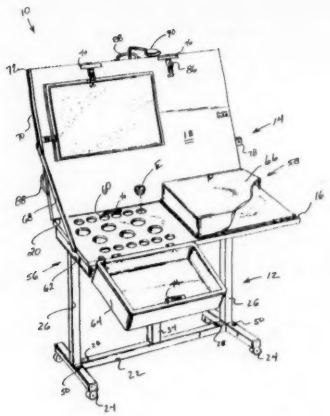
1. A portable field table for temporary work activity comprising:

a height adjustable base,

a case having a tray and a complimentary sized back pivotally attached along an edge of said tray,

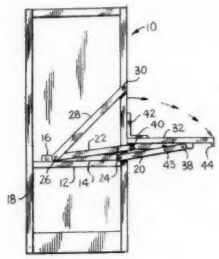
means for limiting the relative pivoting of said tray and said back between a first position wherein said back covers said tray and a second position wherein said back is open at a selected angle to said tray,

said tray having in part a flat work surface and in port a surface having means for receiving devices ancillary to the work to be performed and tools, said receiving means including in part a plurality of varying sized holes formed through the surface of said tray for retaining ocular devices and heating means within said tray for maintaining said ocular device warm when in use, and



means for mounting said case on said height adjustable supporting base for maintaining said table in a selected horizontal position for use.

US 6,340,214 B1
SAFETY SHELF
H. Lee Adams, 6701 N. Country Rd. 1200 E, Charleston, Ill. 61920
Filed Aug. 1, 2000, Appl. No. 630,085
Int. Cl. A47F *5/08*
U.S. Cl. 312—246 **13 Claims**



1. A pull down shelf assembly, in combination with a standard wall cabinet, for fitting inside said standard wall cabinet comprising:

an upper storage shelf having a top, a bottom, a front end and a back end and two side ends, said upper storage shelf having a handle on said front end;

an upper support member attached to said bottom on each side of said upper storage shelf, said upper support member having a web member perpendicular to said bottom of said upper storage shelf;

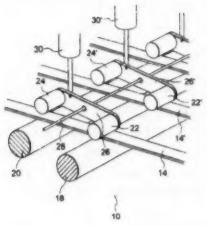
a lower storage shelf directly below said upper storage shelf, said lower storage shelf having a top, a bottom, a front end, a back end and two side ends, said lower shelf being attached to said cabinet;

a lower support member attached to said top and on each of said two side ends of said lower storage shelf, said lower support member having a web perpendicular to said top of said lower shelf;

a first rigid swing member and a second rigid swing member having upper and lower ends, said upper ends rotatably attached to said web on said upper support member by rivets secured to said web and said lower ends rotatably attached to said web on said lower support member by pins secured to said web;

said first and said second rigid swing members being parallel to each other.

US 6,340,215 B1
ELONGATED-STRIP-ARTICLE PROCESSOR
Yoshimichi Yamakita, Uozu, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Jun. 8, 1999, Appl. No. 327,852
Claims priority, application Japan, Jun. 19, 1998, 10-173515
Int. Cl. B41J *3/00*
U.S. Cl. 347—4 **10 Claims**



1. An elongated-strip-article processor comprising:

(a) a processing section for applying printing to a plurality of continuous elongated strip articles along conveying passages of the elongated strip articles by an ink jet printer;

(b) a conveying section disposed in a vicinity of the processing section for intermittently conveying the elongated strip articles by a predetermined length;

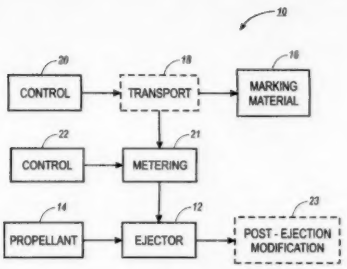
(c) tension adjusting sections respectively disposed upstream and downstream out of a range of the conveying passages including the processing section and the conveying section for adjusting tension of each of the elongated strip articles at a constant value;

(d) sensors respectively provided at the tension adjusting sections for detecting a length of slack of each of the elongated strip articles; and

(e) feed sections disposed respectively upstream of the upstream-side tension adjusting section and downstream of the downstream-side tension adjusting section so as to correspond to the individual elongated strip articles, each feed section being adapted to switch between increasing the feed of each elongated strip article and decreasing the feed of each elongated strip article based on detection signals from the respective sensors.

US 6,340,216 B1
BALLISTIC AEROSOL MARKING APPARATUS FOR TREATING A SUBSTRATE
Eric Peeters, Fremont; Jaan Noolandi, Mountain View; Raj B. Apte, Palo Alto; Philip D. Floyd, Sunnyvale; Jonathan A. Small, Los Altos, all of Calif.; Gregory J. Kovacs, Mississauga, Canada; Meng H. Lean, Briarcliff Manor, N.Y.; Armin R. Volkel, Palto Alto, Calif.; Steven B. Bolte, Rochester, N.Y.; An-Chang Shi, Hamilton, Canada; Frederick J. Endicott, San Carlos; Gregory B. Anderson, Woodside, both of Calif.; Dan A. Hays, Fairport; Joel A. Kubby, Rochester, both of N.Y.; Warren B. Jackson, San Francisco, Calif.; Karen A. Moffat, Brantford, Canada; T. Brian McAneney, Burlington, Canada; Richard P. N. Veregin, Mississauga, Canada; Maria N. V. McDougall, Burlington, Canada; Danielle C. Boils, Mississauga, Canada, and Paul D. Szabo, Islington, Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 30, 1998, Appl. No. 164,250
Int. Cl. B41J *2/015*
U.S. Cl. 347—21 **24 Claims**

1. An apparatus for depositing a substrate treatment material onto a substrate, comprising;



a print head having at least two adjacent channels therein, each said channel having an exit orifice with a width no larger than 250 μm, the at least two adjacent channels spaced no more than 250 μm apart;

a propellant source connected to each said channel such that a gas propellant provided by said propellant source may flow through said channels to form propellant streams therein, said propellant streams having kinetic energy, each said channel directing said propellant stream through said exit orifice toward said substrate; and

a treatment material reservoir communicatively connected to each said channel such that treatment material from said reservoir may be controllably introduced into said propellant stream in each said channel so that the kinetic energy of said propellant stream may cause said treatment material to impact said substrate.

US 6,340,217 B1
INK JET RECORDING APPARATUS AND RECOVERY METHOD THEREOF

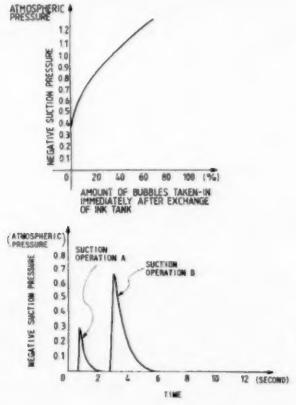
Isao Ebisawa, Yokohama; Atsushi Arai; Hisao Yaegashi, both of Kawasaki, and Hidehiko Kanda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of application No. 08/518,724, filed on Aug. 24, 1995, now Pat. No. 5,805,180. This application Jul. 10, 1998, Appl. No. 113,383.

Claims priority, application Japan, Aug. 26, 1994, 6-202415; Aug. 26, 1994, 6-202579; Aug. 26, 1994, 6-202595

Int. Cl. B41J *2/165;29/38*

U.S. Cl. 347—23 **17 Claims**



12. An ink jet recording apparatus comprising:

a discharge port for discharging an ink; and

suction recovery means for performing a suction recovery operation, the suction recovery means including a cap;

wherein the suction recovery means performs a first suction process for performing suction, and a second suction process for performing suction with a suction force larger than that of said first suction process.

US 6,340,218 B1
SINGLE-PASS WIPING SYSTEM FOR INKJET PRINTHEADS

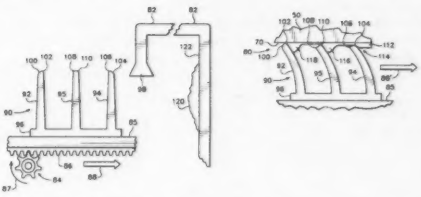
Dean A. Gaylor, Ridgefield, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 28, 1999, Appl. No. 428,859

This patent is subject to a terminal disclaimer.

Int. Cl. B41J *2/165*

U.S. Cl. 347—33 **19 Claims**



1. A wiping system for cleaning ink residue from an inkjet printhead in a printing mechanism, comprising:

a platform moveable through opposing first and second single-pass wiping strokes which are separated in time by printing activity of the printhead;

a first wiper blade and a second wiper blade each supported by the platform; and

a third wiper blade supported by the platform between the first wiper blade and the second wiper blade, wherein the first, second, and third wiper blades each contact and wipe ink residue from the printhead during each of the separate first and second single-pass wiping strokes.

US 6,340,219 B1
INK JET RECORDING APPARATUS

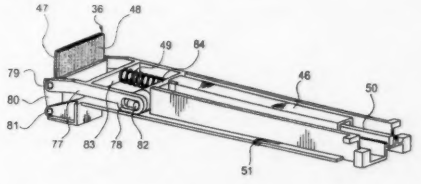
Toshio Kumagai, and Yoshiharu Aruga, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 31, 2000, Appl. No. 541,006

Claims priority, application Japan, Mar. 31, 1999, 11-094058; Mar. 31, 2000, 2000-096375; Mar. 31, 2000, 2000-096418; Mar. 31, 2000, 2000-096456; Mar. 31, 2000, 2000-096483

Int. Cl. B41J *2/165*

U.S. Cl. 347—33 **25 Claims**



1. An ink jet recording apparatus comprising:

a recording head; and

a wiping unit for wiping a nozzle formation face of the recording head including:

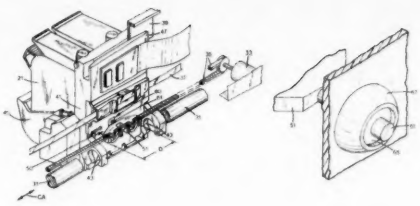
a slider reciprocally moving in a direction parallel with the nozzle formation face;

a wiper supported by the slider, one end of which is pressed against the nozzle formation face as a wiping operation when the slider moves in a first direction, while as a rubbing operation when the slider moves in a second direction opposed to the first direction;

a supporter for rotatably supporting the other end of the wiper on the slider;

a spring for urging the wiper toward the nozzle formation face while keeping an attitude of the wiper directed by a reaction force generated when the wiping operation is executed; and

a rotation limitter for restricting the rotation of the wiper such that the wiper is rigidly supported by the slider when the rubbing operation is executed.



US 6,340,220 B1

TRANSFERRING SPITTOON SYSTEM FOR WASTE INKJET INK

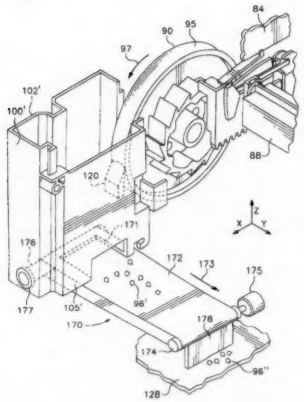
Dean A. Gaylor; Michael S. Millman, both of Vancouver, Wash., and John A. Barinaga, Portland, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 31, 2000, Appl. No. 494,845

This patent is subject to a terminal disclaimer.

Int. Cl. B41J *2/165*

U.S. Cl. 347—35 **20 Claims**



1. A spittoon system for receiving ink residue spit from an inkjet printhead in an inkjet printing mechanism, comprising:

a temporary storage container that receives ink residue which has been spit from the inkjet printhead, with the temporary storage container defining an exit opening therethrough;

a permanent storage container; and

a transfer mechanism which receives the ink residue from the temporary storage container exit opening and transfers the ink residue to the permanent storage container.

US 6,340,221 B1

INK JET PRINT CARRIAGE DRIVE SYSTEM THAT APPLIES DRIVE FORCE AT LOCATION DISPLACED FROM DRIVE BELT

Matt G. Driggers, and Robert P. Callaway, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 18, 2000, Appl. No. 665,240

Int. Cl. B41J *11/22*

U.S. Cl. 347—37 **10 Claims**

3. A print carriage assembly for a printer comprising:

a print carriage slidably mounted on a slider rod that is parallel to a carriage scan axis;

a reciprocating drive belt;

a belt clamp attached to said drive belt;

a compliant coupling structure interposed between said belt clamp and said print carriage for applying a driving force to said print carriage at a location that is displaced from said belt clamp and located close to a centroid of retarding forces to which said carriage is subjected, said compliant coupling structure configured to deflect said belt while applying said driving force to said print carriage.

US 6,340,222 B1

UTILIZING VENTING IN A MEMS LIQUID PUMPING SYSTEM

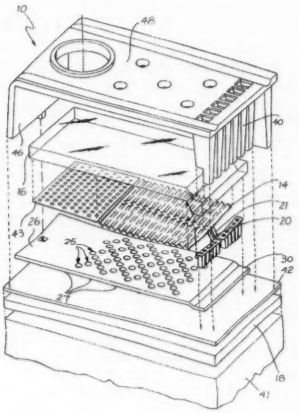
Kia Silverbrook, Sydney, Australia, assignor to Silverbrook Research Pty Ltd, Balmain, Australia

Filed Jul. 10, 1998, Appl. No. 113,093

Claims priority, application Australia, Jul. 15, 1997, 7991; Jul. 15, 1997, 8007

Int. Cl. B41J *2/015;2/135;2/14;2/04;* **G01D** *15/00*

U.S. Cl. 347—54 **2 Claims**



1. A method of fabricating an ink jet print head, the method including the steps of:

depositing a layer of a hydrophobic material on a wafer incorporating drive circuitry and etching the hydrophobic material to define air inlets in the layer of hydrophobic material;

forming a plurality of thermal actuators, by deposition and etching techniques, on the layer of hydrophobic material so that each thermal actuator comprises at least a conductive heating portion positioned within hydrophobic material and spaced from the layer of hydrophobic material deposited on the wafer, the thermal actuators being formed so that the air inlets are in fluid communication with a surface of each thermal actuator; and

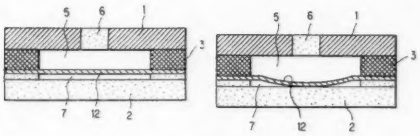
forming a plurality of nozzle chambers on the wafer, by deposition and etching of a sacrificial material so that each thermal actuator is positioned within a nozzle chamber, and so that each nozzle chamber has an ink ejection port.

US 6,340,223 B1

INK-JET HEAD AND FABRICATION METHOD OF THE SAME

Susumu Hirata, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 2, 2000, Appl. No. 585,406
Claims priority, application Japan, Jun. 28, 1999, 11-181038; Sep. 29, 1999, 11-276705; Oct. 22, 1999, 11-300424
Int. Cl. B41J 2/05
U.S. Cl. 347—56 21 Claims



1. An ink-jet head for ejecting ink by heating and bubbling ink, comprising:

a heating element to which electric current is supplied so as to heat and bubble the ink; and

a head substrate having a void formed between the heating element and the head substrate,

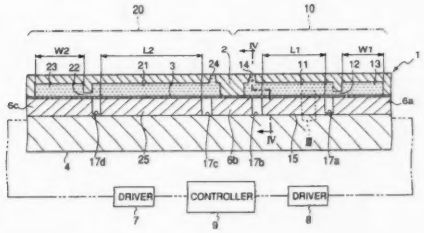
wherein the heating element buckles into the void by thermal expansion accompanying a temperature rise of the heating element.

US 6,340,224 B1

INK JET RECORDING HEAD

Hideo Hotomi, Nishinomiya; Kenji Masaki, Nagaokakyo, and Koji Yamamoto, Takarazuka, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed May 14, 1997, Appl. No. 855,943
Claims priority, application Japan, May 14, 1996, 8-118840
Int. Cl. B41J 2/045
U.S. Cl. 347—70 15 Claims



1. An ink-jet recording head having first and second head portions, and a controller, each of said head portions comprising:

a plate having an ink cavity for accommodating an ink material;

a nozzle extending from said ink cavity for ejecting therethrough said ink material accommodated in said ink cavity; and

an actuator disposed adjacent to said ink cavity, said actuator causing said ink material to be ejected through said nozzle as an ink droplet;

wherein a size of said ink cavity in said first head portion is different than a size of said ink cavity in said second head portion to thereby eject through said first head portion said ink droplet having a size which is different from a size of said ink droplet ejected through said nozzle in said second head portion, wherein a size of said nozzle in said first head portion is the same as a size of said nozzle in said second head portion; and

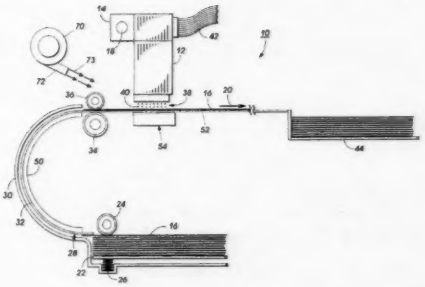
wherein said controller is adapted to control a voltage applied to each of said actuators in each of said first and second head portions so that in at least one of said head portions the voltage applied to said actuator is controlled so as to change a size of said ink droplet ejected therefrom.

US 6,340,225 B1

CROSS FLOW AIR SYSTEM FOR INK JET PRINTER

Thomas F. Szlucha, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 19, 1999, Appl. No. 232,640
Int. Cl. B41J 2/01
U.S. Cl. 347—102 13 Claims



1. A printing machine for printing on a recording medium moving along a path through a print zone, comprising:

a printhead adapted to deposit ink on the recording medium in the print zone; and

a cross flow blower disposed adjacently to the path and at a position in the path prior to the print zone,

wherein the cross flow blower creates an air flow in the path from at least a position just before the print zone to a position at least just after the print zone.

US 6,340,226 B1

SPECTACLES ACCOMMODATING INTERCHANGEABLE/REPLACEABLE LENS

Toshihisa Akaba; Kazumichi Kurihara; Yasushi Sakai; Hakaru Fujita; Youichi Ishiguro; Isao Iizuka, and Yukihiro Izumitani, all of Tokyo, Japan, assignors to Hoya Corporation, Tokyo, Japan

PCT No. PCT/JP00/02718, § 371 Date Dec. 1, 2000, § 102(e) Date Dec. 1, 2000, PCT Pub. No. WO00/67066, PCT Pub. Date Nov. 9, 2000
PCT Filed Apr. 26, 2000, Appl. No. 701,683
Claims priority, application Japan, Apr. 30, 1999, 11-124995
Int. Cl. G02C 1/04; 1/08
U.S. Cl. 351—106 9 Claims

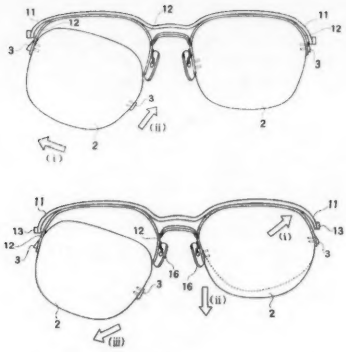
1. Spectacles accommodating at least one interchangeable/replaceable lens, the spectacles comprising:

a frame portion;

at least one lens mounted to the frame portion;

at least one lens-side-connecting member for engaging and mounting a corresponding lens detachably to the frame portion, each lens-side-connecting member being separate from each lens and fixed to an edge portion of each lens; and

at least one elastic frame-side-connecting member disposed on the frame portion and detachably connected to a corresponding lens-side-connecting member using elastic deformation

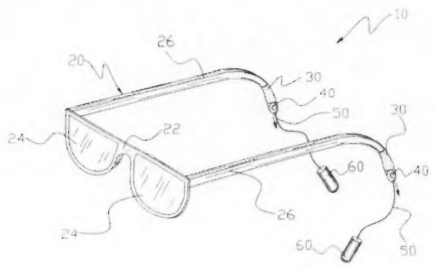


for mounting a corresponding lens detachably to the frame portion.

US 6,340,227 B1
EARPLUG SYSTEM

Timothy J. Solberg, 1291 Via Constessa, San Marcos, Calif. 92069, and Gary I. Solberg, Staples, Minn., assignors to Timothy J. Solberg, San Marcos, Calif.

Filed Mar. 13, 2001, Appl. No. 805,756
Int. Cl. G02C *5/14*
U.S. Cl. 351—123 **18 Claims**



1. An earplug system for attaching to the distal end of an arm of glasses, comprising:

a connector formed for attaching to the distal end of the arm of glasses;

a recoil device attached to said connector;

a length of cord stored within and dispensed from said recoil device; and

an earplug attached to said cord.

US 6,340,228 B1
CONFORMABLE SOFT NOSE PADS

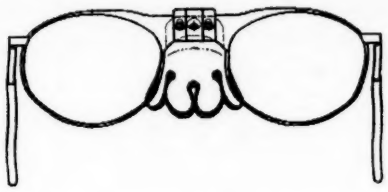
Thomas A. Cummings, Jackson; David Nowak, Dexter, and Byung Jin Chang, Ann Arbor, all of Mich., assignors to General Scientific Corporation, Ann Arbor, Mich.

Filed Aug. 24, 2000, Appl. No. 645,628
Int. Cl. G02C *5/12*
U.S. Cl. 351—136 **10 Claims**

1. A nose pad for eyeglasses having a bridge and eyeglass lenses, the nose pad comprising:

a shaped, formable surface, having a flange, two outer tabs and two inner tabs,

the inner tabs being formable to fit the wearer's nose,



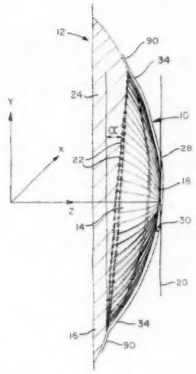
the outer tabs being formable to fit part of the undersides of the lenses, which are adjacent to the bridge; and

means for removably mounting the flange to the eyeglass bridge.

US 6,340,229 B1
SOFT CONTACT LENS

David M. Lieberman, New York, N.Y., and Jonathon Grierson, Atwater, Ohio, assignors to Scientific Optics, Inc., New York, N.Y.

PCT No. PCT/US99/20721, § 371 Date Apr. 11, 2001, § 102(e) Date Apr. 11, 2001, PCT Pub. No. WO00/14593, PCT Pub. Date Mar. 16, 2000
Provisional application No. 60/099,426, filed on Sep. 8, 1998.
This PCT application Sep. 8, 1999, Appl. No. 762,504.
Int. Cl. G02C *7/04*
U.S. Cl. 351—160 R **20 Claims**



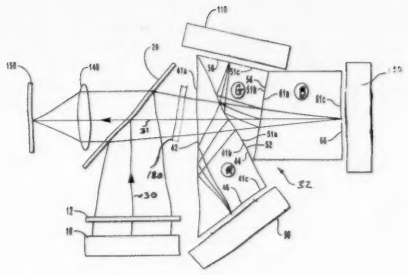
1. A contact lens constructed to fit on a patient's eye including a cornea which is tilted relative to the line-of-sight of the eye, the cornea also exhibiting upper and lower distortions in shape caused by the eyelids, the contact lens having a central portion and a radially outer transition portion having a posterior surface which overlies the cornea and conforms thereto, the central portion being tilted so as to approximate the corneal tilt.

US 6,340,230 B1
METHOD OF USING A RETARDER PLATE TO IMPROVE CONTRAST IN A REFLECTIVE IMAGING SYSTEM

Brett J. Bryars; Michael R. Greenberg, and Sean Sullivan, all of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Mar. 10, 2000, Appl. No. 523,370
Int. Cl. G03B *21/00*
U.S. Cl. 353—31 **22 Claims**

1. An image projection system, the projection system comprising:



(a) a polarizing element,

(b) a spatial light modulator for reflecting an image signal comprised of pixels selectively modulated in polarization state from the incident light arriving from said polarizing element,

(c) a waveplate retarder disposed on the optical axis between said polarizing element and said spatial light modulator wherein said waveplate retarder is disposed such that the angle of incidence is greater than zero, whereby the Fresnel reflection from one or more surfaces of said waveplate retarder is directed away from the optical axis.

US 6,340,231 B1

ELECTRICALLY ADJUSTABLE EXTERNAL REAR VIEW MIRROR

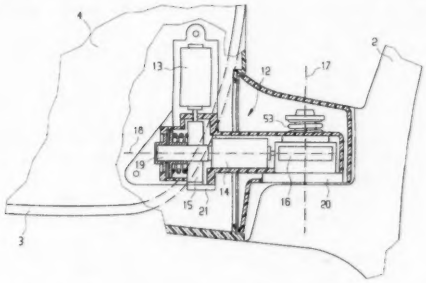
Herwig Polzer, Miltenberg, Germany, assignor to Donnelly Hohe GmbH & Co. KG, Germany

Filed Mar. 26, 1999, Appl. No. 277,465

Claims priority, application Germany, Apr. 1, 1998, 198 14 712

Int. Cl. G02B *7/182*

U.S. Cl. 359—872 **11 Claims**



1. An electrically adjustable external rear view mirror for a motor vehicle, the electrically adjustable external rear view mirror comprising:

a mirror element comprising a mirror reflector surface, said mirror element having a rearward view when mounted on the motor vehicle to enable a driver of the vehicle to see traffic behind the vehicle;

a housing, said mirror element being incorporated in a cavity formed by said housing, said housing and said mirror element being rigidly connected together such that said mirror element cannot move independent of movement of said housing;

a mirror base fixable to the motor vehicle, said housing connecting to and adjustable about said mirror base;

an electrically operated adjustment device comprising at least one electric motor for adjustment of said housing about two non-parallel axes of rotation relative to said mirror base wherein said rearward view of said mirror element is electrically adjusted by said two-axis adjustment of said housing relative to the vehicle body allowing the driver to set said rearward view at a preferred setting from a plurality of settings according to the body size and seating position of the driver of the vehicle and wherein said adjustment device includes at least one anti-rotational element whereby inadvertent swiveling of said housing is reduced; and

wherein said adjustment device comprises at least one worm gear operated by said at least one electrical motor, said at least one anti-rotational element being arranged directly on said at least one worm gear.

US 6,340,232 B1

LIGHTING UNIT

Peter Knoll, Ettlingen; Gunther Haas, and Arndt Wagner, both of Leonberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

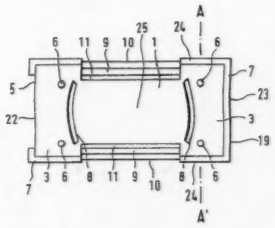
PCT No. PCT/DD97/01983, § 371 Date Jul. 8, 1999, § 102(e) Date Jul. 8, 1999, PCT Pub. No. WO98/30835, PCT Pub. Date Jul. 16, 1998

PCT Filed Sep. 8, 1997, Appl. No. 341,345

Claims priority, application Germany, Jan. 9, 1997, 197 00 472

Int. Cl. G01D *11/28*

U.S. Cl. 362—26 **22 Claims**



1. An illumination unit for planar illumination, comprising:

a first light source;

a waveguide plate, the waveguide plate being made of one of transparent material and slightly light-diffusing material, the waveguide plate including a first mounting support for mounting one of a second plate and a film to be placed on a top surface of the waveguide plate, the waveguide plate having a first region and a second region, the mounting support being arranged in the first region, light emitted by the first light source being coupled into the second region, the waveguide plate further including an arrangement for substantially limiting light from the light source from being transmitted from the second region into the first region, the arrangement being arranged between the first region and the second region.

US 6,340,233 B1

DECORATIVE TUBE LIGHT WITH MULTIPLE BRANCHES

Whiter Shieh, 6F, No. 245, Tun Hua South Road, Sec. 1, Taipei, 106, Taiwan

Filed Apr. 21, 2000, Appl. No. 553,760

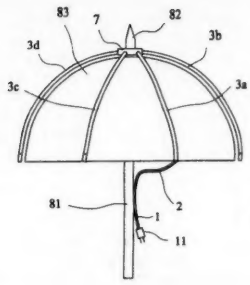
Int. Cl. A45B *3/02*; **H01R** *33/90*

U.S. Cl. 362—102 **18 Claims**

18. A decorative tube light assembly, comprising:

a power line section having a first end connected with an electrical plug and a second end, and a pair of conductive wires spaced from each other and extending in parallel to each other in the power line section from the first end to the second end thereof;

at least one branch member having an input end removably connected to the second end of the power line section and at least one output end, a pair of conductive wires being spaced



from each other and extending from the input end to each output end, wherein the branch member is a U-shaped structure having an input end connected onto the second end of the power line section and an output end; and

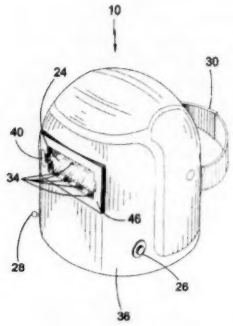
at least one tube light branch, the tube light branch having a first end removably connected to one of the output end of the branch member and a second end mounted with an end cap, the tube light branch comprising a pair of conductive wires spaced from each other and extending in parallel to each other from the first end of the second end thereof and a plurality of light emitting elements electrically connected between the conductive wires, thereby forming a decorative tube light string.

US 6,340,234 B1

ILLUMINATED LENS DEVICE FOR WELDERS HELMET

Manning Brown, Jr., 126 Coolidge Ave., Amityville, N.Y. 11701

Filed Jul. 31, 2000, Appl. No. 628,769
Int. Cl. F21V *21/084*
U.S. Cl. 362—105 **12 Claims**



1. An apparatus for illuminating a lens of a face shield to be worn by a welder, the improvement comprising:

a) a plurality of lights disposed about the lens of the face shield;

b) a plurality of light beams illuminating from said lights, said light beams travelling parallel to a plane of the lens of the face shield;

c) a power supply for said lights disposed on the face shield;

d) an on/off switch for said lights disposed on the face shield;

e) a time delay switch for delaying the delivery of power to said lights; and

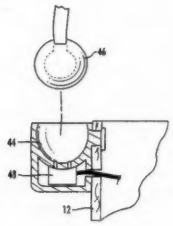
f) electrical connecting means disposed on the face shield for electrically connecting said lights, said power supply, said time delay switch and said on/off switch.

US 6,340,235 B1

ADAPTABLE ELECTRIC ACCESSORY SYSTEM FOR CONTAINERS, RECEPTACLES, AND THE LIKE

Jimmy H. Bryan, 1031 Voight, Houston, Tex. 77009

Continuation-in-part of application No. 09/005,655, filed on Jan. 12, 1998. This application Dec. 13, 1999, Appl. No. 460,368.
Int. Cl. A45C *15/06*
U.S. Cl. 362—156 **37 Claims**



9. An illuminating accessory system comprising:

a retainer device having an interior surface defining an interior compartment;

a liner having an interior adapted for removably receiving objects to be carried by said retainer device through an opening in said liner, said liner being removably positioned within the interior compartment of said retainer device, said liner having an exterior surface of a shape and size generally conforming to a size and shape of the interior surface of said interior compartment of said retainer device such that the exterior surface of said liner is located adjacent to the interior surface of said retainer device when said liner is removably positioned in said retainer device;

at least one light source secured on said liner for illuminating the interior of said liner;

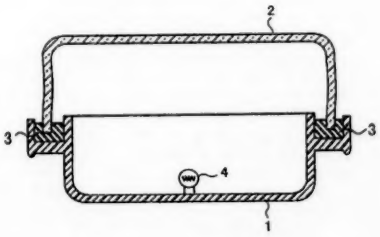
an electrical power source secured on said liner in a manner such that said electrical power source is removable with said liner from said retainer device.

US 6,340,236 B1

HOT MELT ADHESIVE COMPOSITION

Takashi Hisanaga, Kanagawa, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 26, 2000, Appl. No. 558,156
Claims priority, application Japan, Apr. 28, 1999, 11-121239
Int. Cl. F21V *29/00*
U.S. Cl. 362—267 **14 Claims**



1. A hot melt adhesive composition wherein 2–30 parts by mass of calcium oxide is blended with 100 parts by mass of a hot melt adhesive composition containing rubber, amorphous polyolefin and a resinous tackifier.

US 6,340,237 B1

LAMP CARTRIDGE

Ritsuo Koga, and Hideto Kubouchi, both of Tokyo, Japan, assignors to Plus Corporation, Tokyo, Japan

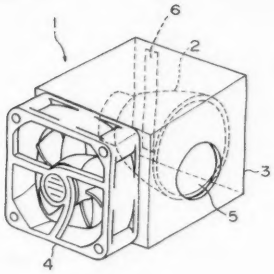
PCT No. PCT/JP98/03341, § 371 Date Mar. 11, 1999, § 102(e) Date Mar. 11, 1999, PCT Pub. No. WO99/06763, PCT Pub. Date Feb. 11, 1999

PCT Filed Jul. 28, 1998, Appl. No. 254,651

Claims priority, application Japan, Jul. 31, 1997, 9/205121

Int. Cl. F21V *29/00*

U.S. Cl. 362—294 **28 Claims**



1. A lamp cartridge, comprising:

a lamp utilized as a light source;

a reflecting mirror for converging light emitted by the lamp;

a case for covering the lamp and the reflecting mirror and for supporting the lamp and the reflecting mirror; and

a fan, for exhausting heat from within the case, disposed at a window positioned on a side surface of the case covering a side of the reflecting mirror, said side surface being parallel to an optical axis of the reflecting mirror,

wherein one of at least one surface forming the case from which a ray emitted from the reflecting mirror goes out includes an optical axis of the reflecting mirror and has a hole having a diameter smaller than the reflecting mirror formed thereon, and

wherein outside air is introduced into the case through the hole and heat generated by the lamp and the reflecting mirror is exhausted by the fan.

US 6,340,238 B1

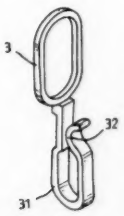
HANGER STRUCTURE USED FOR DECORATIVE LIGHT BULB STRINGS

Wun Fang Pan, No. 123, Lane 99, Pu Din Road, Hsinchu City, Taiwan

Filed Jul. 7, 2000, Appl. No. 612,447

Int. Cl. F21V *21/36*

U.S. Cl. 362—391 **1 Claim**



1. A hanger for miniature light bulb strings comprising a longitudinally extended structure having a first loop portion formed on one end thereof and defining a vertically directed first planar envelope, and a second loop portion formed on an opposing end defining a vertically directed second planar envelope, said second planar envelope being substantially orthogonal to said first planar envelope, said first loop portion being formed by a closed ring for use in mounting to a support structure, said second loop being formed by a U-shaped resilient arm with a distal end having an arcuate portion spaced from said longitudinally extended structure to define an open upper end of said second loop, said arcuate portion being spaced from said longitudinally extended structure by a distance less than a diameter of an electrical conductive wire of a miniature light bulb string for removably capturing at least a pair of electrical conductive wires of the miniature light bulb string within said second loop.

US 6,340,239 B1

INDICATOR LIGHT WITH UNIFORM ILLUMINATING SURFACE FOR A MOTOR VEHICLE

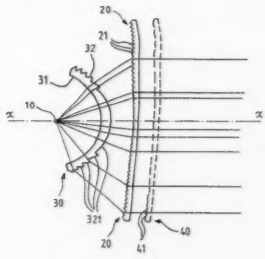
Vincent Godbillon, Paris, and Jean Claude Gasquet, Sens, both of France, assignors to Valeo Vision, Bobigny, France

Filed Mar. 1, 2000, Appl. No. 516,795

Claims priority, application France, Mar. 2, 1999, 99 02666

Int. Cl. B06Q *1/04;* **F21V** *5/00*

U.S. Cl. 362—521 **15 Claims**



1. An indicator light for a motor vehicle comprising a light source, an optical plate having optical configurations adapted to straighten out the lighting originating from a region of the source so that it is propagated with an average direction generally parallel to a horizontal optical axis, and a flux-distributing and recuperating cup interposed between the source and the optical plate and adapted to provide a given distribution of the light over the inner surface of the optical plate in at least one given direction, wherein the optical plate has a height and a width of the same order of magnitude and possesses optical configurations exhibiting coefficients of transmission of the light which are different from one another, and wherein the cup provides a given distribution of the light, both in the horizontal direction and in the vertical direction, which takes account of said different transmissions coefficients so as to obtain an illumination at the exit from said plate which is essentially constant in the horizontal direction as well as in the vertical direction.

US 6,340,240 B1

DRUM MIXER HAVING ISOLATED AGGREGATE TRANSPORT CHANNELS

George W. Swisher, Jr., Oklahoma City, and Jianmin Zhang, Norman, both of Okla., assignors to CMI Corporation, Oklahoma City, Okla.

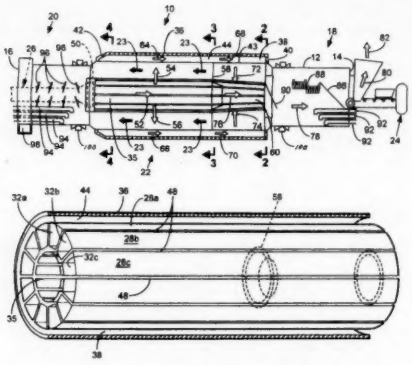
Continuation of application No. 09/324,248, filed on Jun. 2, 1999, now Pat. No. 6,267,493. This application May 21, 2001, Appl. No. 862,109.

Int. Cl. B28C *5/46*

U.S. Cl. 366—25 **33 Claims**

1. A drum mixer for heating, drying and mixing of aggregate material, comprising:

an inclined drum forming a pre-heating/blending section adjacent said first end, and a heating/drying/mixing section adjacent to said pre-heating/blending section;



means for feeding aggregate material into the pre-heating/blending section of said drum for movement of the aggregate material sequentially through said pre-heating/blending section, and said heating/drying/mixing section;

a burner assembly creating a high temperature gas stream flowing through said heating/drying/mixing section and said pre-heating/blending section; and

tubular compartments in said heating/drying/mixing section, each of the tubular compartments defining an aggregate transporting channel within the tubular compartment such that at least a portion of each of the aggregate transporting channels is isolated from the other aggregate transporting channels, the aggregate transporting channels extending through at least a portion of said heating/drying/mixing section such that the aggregate transporting channels within the tubular compartments are out off direct contact with the high temperature gas stream and said tubular compartments are exposed to said high temperature gas stream whereby said aggregate material can be heated indirectly by said high temperature gas stream as the aggregate material passes through the aggregate transporting channels.

US 6,340,241 B2

POWER RESERVE INDICATOR MECHANISM AND WATCH FITTED WITH SUCH A MECHANISM

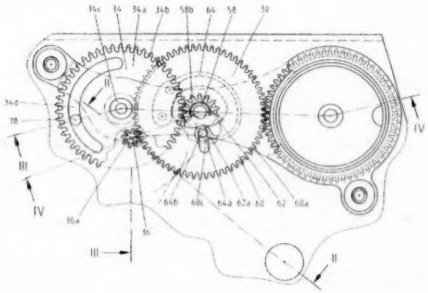
Sébastien Jeanneret, Le Locle, Switzerland, assignor to Parmigiani, Mesure et art du Temps S.A., Switzerland

Filed Mar. 26, 2001, Appl. No. 817,453

Claims priority, application European Pat. Off., Mar. 27, 2000, 00106573

Int. Cl. G04B *9/00*

U.S. Cl. 368—210 **15 Claims**



1. A power reserve indicator mechanism for a timepiece movement of the type fitted with a power source formed of a motor spring (**26**), including a frame (**10**, **12**, **14**, **16**), a power reserve indicator and a differential gear (**30**) with a first input (**44**) connected to a wheel (**29**) driven in rotation when the motor spring is wound, a second input (**42**) connected to a wheel (**20**) driven in rotation when the motor spring is let down, and an output (**36***a*) connected to said indicator, wherein the indicator is capable of covering a given angle comprised between two end positions, the first of which is occupied when the motor spring is wound and the second, defined by a stop (**78**), when the motor spring is let down,

wherein an intermediate wheel (**32**) is inserted between the output of the differential gear and said indicator and includes a resilient member (**64**) and two coaxial parts, one formed of a wheel (**60**), and the other of an arbor (**58**), one connected to said output (**36***a*), the other to said indicator and connected to each other by said resilient member, said wheel being arranged so that the two parts rotate together while the indicator occupies a position comprised between said two end positions and wherein, at least when said indicator occupies its second end position, said gear continues to rotate freely while the indicator remains in abutment (against stopping means), and the resilient member is wound, while the motor spring drives the movement.

US 6,340,242 B1

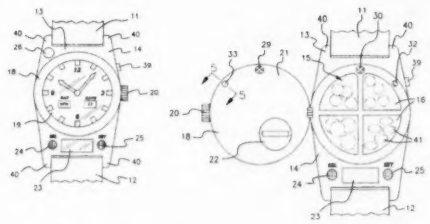
STRAP-ON STORAGE, REMINDER AND WATCH DEVICE

Toni L. Sandidge, 607 Morgan St., Pittsburgh, Pa. 15219

Filed May 4, 2000, Appl. No. 564,718

Int. Cl. G04B *37/12*

U.S. Cl. 368—278 **16 Claims**



1. A strap-on pill storage and reminder watch device comprising:

a plurality of strap members for fastening about a wrist of a user;

a housing having a top wall, an opening in said top wall, and at least one storage compartment disposed therein and being accessible through said opening in said top wall, said housing further having means for attaching said housing to said strap members;

a cover member hingedly attached to said housing for releaseably and securely closing over said compartment of said housing, said cover member including a timepiece having a clock face and a clock setting member movably attached thereto;

a reminder means for reminding the user when to take medication; and

a means for locking and releasing said cover member to and from said housing;

wherein said cover member further includes a bottom wall, and a battery access cover removably attached to said bottom wall;

wherein said reminder means includes an information-displaying window disposed in said top wall of said housing, an alarm-type selecting member depressibly disposed in said top wall of said housing, an alarm time setting member also depressibly disposed in said top wall of said housing, a flashable light-emitting member disposed through said top wall of said housing for indicating an alarm going off, a speaker disposed in and through a bottom wall of said housing for emitting a sound alarm, a vibrating mechanism disposed in said housing and capable of vibrating said housing upon an alarm going off, contact members one of which is securely disposed in said bottom wall of said cover member near the perimeter

thereof and another of which is securely disposed in said top wall of said housing, said contact members being adapted to essentially interconnect said timepiece with an alarm triggering mechanism, and an alarm power source disposed in said housing.

US 6,340,243 B1

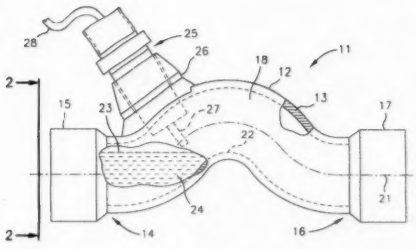
LIQUID/GAS PHASE DETECTOR SYSTEM

Robert A. Deane, Encinitas, and Jeffrey P. Deane, Carlsbad, both of Calif., assignors to Fluid Components Intl, San Diego, Calif.

Filed Dec. 3, 1998, Appl. No. 205,524

Int. Cl. G01N *33/00;11/02;25/00;* **G01F** *1/36*

U.S. Cl. 374—24 **34 Claims**



1. A liquid/gas phase detector system comprising:

a flow conditioner comprised of a segment of pipe having a wall, an inlet end and an outlet end;

an elevated surface creating a weir within said pipe segment that is between said inlet and outlet ends, said weir having a crest, said crest of said weir being vertically higher than the centerline of said inlet end, a reference plane being defined as a horizontal extension toward said inlet end from said crest of said weir;

a sensor configured to effectively extend through said wall of said pipe segment at a location between said inlet end and said crest, said sensor having a sensing element with a sensitive portion and being so configured and mounted to said pipe segment that said sensitive portion of said sensing element is vertically higher than said reference plane, said sensor being configured to generate signals relative to pressure, flow and phase related changing events in said pipe segment; and

means for conducting the signals to a location remote from said sensor for processing;

whereby when liquid within said inlet end accumulates to a level higher than said reference plane, it will be detected by said sensor as it flows over said crest of said weir to said outlet end.

US 6,340,244 B1

ROLLING BEARING FOR HARD DISK DRIVE

Yasunobu Fujita; Masao Yamamoto; Kouichi Hachiya; Atsushi Yokouchi; Toshikazu Yabe; Emiko Shiraishi, and Michiharu Naka, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jun. 5, 1998, Appl. No. 90,921

Claims priority, application Japan, Jun. 6, 1997, 9-149403

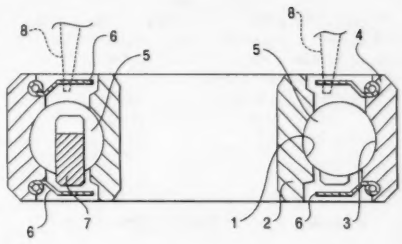
Int. Cl. F16C *33/66*

U.S. Cl. 384—462 **13 Claims**

1. A rolling bearing for a hard disk drive comprising:

an inner ring;

an outer ring;



a plural number of rolling elements located between said inner ring and said outer ring;

a cage supporting said plural number of rolling elements;

a pair of sealing members fixed to both ends in an axial direction of one of said inner ring and said outer ring and disposed opposite to each other; and

a sole lubricant consisting of lubricating oil directly injected into a to-be-sealed bearing space defined between said sealing members at the both ends in the axial direction, wherein the amount of the lubricating oil is in a range of 1 to 50% by volume of the to-be-sealed bearing space, in which an amount of said lubricating oil is preliminarily contained in said cage, and the amount is in a range of 10–40% by weight of said cage.

US 6,340,245 B1

COATED ROLLING ELEMENT BEARING

Stuart Alexander Leslie Horton, Zeist; Renier Olga Ernst Vijgen, Vleuten; Robin Thomas Cundill, Nieuwegein, all of Netherlands, and Hans Sjöström, Gotenburg, Sweden, assignors to SKF Engineering & Research Centre B.V., Nieuwegein, Netherlands

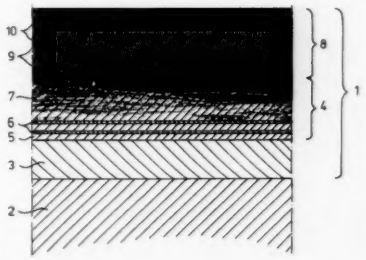
PCT No. PCT/NL98/00533, § 371 Date Apr. 26, 2000, § 102(e) Date Apr. 26, 2000, PCT Pub. No. WO99/14512, PCT Pub. Date Mar. 25, 1999

PCT Filed Sep. 16, 1998, Appl. No. 486,218

Claims priority, application Netherlands, Sep. 16, 1997, 1007046

Int. Cl. F16C *33/32*

U.S. Cl. 384—492 **18 Claims**



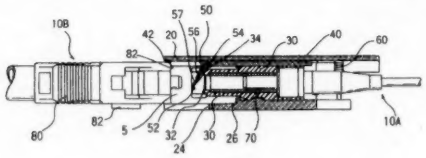
1. A rolling element bearing, comprising an inner ring, an outer ring and rolling elements which are in rolling contact with the raceways of the inner ring and the outer ring, wherein at least one of the rolling elements and the raceway of at least one of the rings is coated with a metal-mixed diamond-like carbon coating comprising alternating layers of predominantly diamond-like carbon, but containing some metal carbide, and layers of predominantly metal carbide, but containing some of the diamond-like carbon.

US 6,340,246 B1

OPTICAL CONNECTOR WITH SHUTTER

Futoshi Yoshida, and Akihiro Shimotsu, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Filed May 21, 1999, Appl. No. 316,188
Claims priority, application Japan, Jun. 5, 1998, 10-157626
Int. Cl. G02B *6/38*
U.S. Cl. 385—73 **4 Claims**



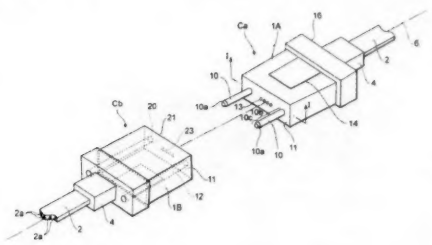
1. An optical receptacle connector with a shutter, comprising:
a housing into which a pair of optical transmission devices is plugged;
a movable member movable with respect to said housing in accordance with movement of said optical transmission devices; and
a shutter attached to said movable member and movable with respect to said housing in accordance with movement of said movable member to close/open an optical output of said optical transmission devices.

US 6,340,247 B1

FERRULE FOR OPTICAL CONNECTOR, MOLD FOR FERRULE, METHOD OF MANUFACTURING FERRULE FOR OPTICAL CONNECTOR, AND METHOD OF TESTING FERRULE FOR OPTICAL CONNECTOR

Wataru Sakurai; Hiroshi Katsura; Toshiaki Kakii, and Masahiro Shibata, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

PCT No. PCT/JP99/04279, § 371 Date Jun. 7, 2000, § 102(e) Date Jun. 7, 2000, PCT Pub. No. WO00/08504, PCT Pub. Date Feb. 17, 2000
PCT Filed Aug. 6, 1999, Appl. No. 509,953
Claims priority, application Japan, Aug. 7, 1998, 10-225009
Int. Cl. G02B *6/36*
U.S. Cl. 385—78 **14 Claims**



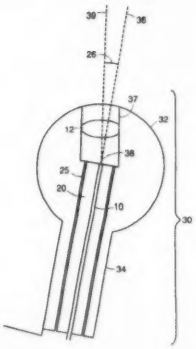
1. An optical connector ferrule comprising:
a mating surface made of resin;
an optical fiber accommodating hole having an inner surface and one end portion, said inner surface extending along a predetermined plane and being made of the resin, and one end portion reaching said mating surface;
a first guide projection having proximal and distal end portions, said first guide projection continuously extending from said mating surface along the predetermined plane, and said first guide projection being made of the resin; and
a guide engaging portion continuously extending from said mating surface along the predetermined plane, said guide engaging portion made of the resin;
wherein said mating surface, said optical fiber accommodating hole, said guide projection and said guide engaging portion are integrally formed.

US 6,340,248 B1

HIGH PRECISION OPTICAL COLLIMATOR FOR OPTICAL WAVEGUIDE

Isaac Naor, Hod Hasharon, Israel, assignor to Lasercomm Inc., Plano, Tex.

Provisional application No. 60/189,395, filed on Mar. 15, 2000. This application Jul. 11, 2000, Appl. No. 613,858.
Int. Cl. G02B *6/36*
U.S. Cl. 385—79 **20 Claims**



1. A method for enabling reliable, consistent alignment of a beam of light exiting an end of an optical fiber, with a collimating lens, wherein the optical fiber end is cut at a non-perpendicular angle to a longitudinal axis of the optical fiber, and the beam of light exits the optical fiber end at an exit angle relative to the longitudinal axis, said method comprising the steps of:
providing an object comprising a spherical surface having a center;
generating a first bore in said object, said first bore having a longitudinal axis intersecting said center;
generating a second bore in said object, said second bore having a longitudinal axis intersecting said center, said longitudinal axis of said first bore and said longitudinal axis of said second bore intersecting said center at a predetermined angle, said predetermined angle being equivalent to the exit angle and being determined by the non-perpendicular optical fiber cut angle;
positioning the end of the optical fiber in said first bore; and
positioning the collimating lens in said second bore, whereby the beam of light is aligned substantially with the center of said collimating lens.

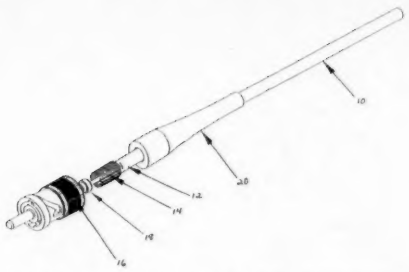
US 6,340,249 B1

CONNECTOR ASSEMBLY AND METHOD OF SECURING FIBER OPTIC CABLE TO CONNECTOR

Earl J. Hayes, South Lyon, Mich.; Thomas A. Hall, III, Hickory, N.C., and Bo M. Wang, Greer, S.C., assignors to Alcoa Fujikura Limited, Brentwood, Tenn.

Filed Sep. 13, 1999, Appl. No. 394,739
Int. Cl. G02B *6/36*
U.S. Cl. 385—86 **15 Claims**

1. A fiber optic connector assembly for connecting a fiber optic connector and a fiber optic cable, said cable having a cable jacket and a strengthening material, said connector assembly comprising:
a connector assembly body having an exterior surface with a geometric pattern; and
a strain relief boot having an inner surface geometrically designed to mate with said geometric pattern of said exterior surface of said connector assembly body such that when said



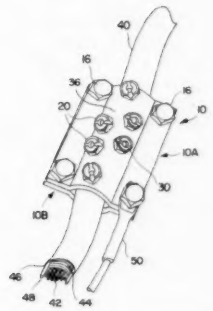
cable is positioned so that said cable jacket and strengthening material touch and cover said exterior surface of said connector assembly body and said strain relief boot is slid over said connector assembly body, said cable jacket and said strengthening material are captured in a hazardous path formed between said mating inner surface of said strain relief boot and said exterior surface of said connector assembly body.

US 6,340,250 B1

FIBER OPTIC SHIELD CONNECTOR

William T. Auclair, Winsted, Conn., assignor to Electric Motion Company, Inc., Winsted, Conn.

Filed Jan. 24, 2000, Appl. No. 489,642
Int. Cl. G02B *6/36*
U.S. Cl. 385—87 **14 Claims**



1. A fiber optic shield connector comprising:

a clamp constructed of conductive material defining an open ended, generally cylindrical cavity for receiving a fiber optic cable, said clamp having at least one threaded opening; and

a grounding screw threadable with said threaded opening and including a driving head, a threaded shank axially extending from said head and terminating in a sharpened hollow point having a deep axial recess in the shank surrounded by a cutting edge which forms the extreme distal tip of said grounding screw,

wherein said shank is axially dimensioned to allow said shank to protrude a pre-determined distance into said receiving cavity.

US 6,340,251 B1

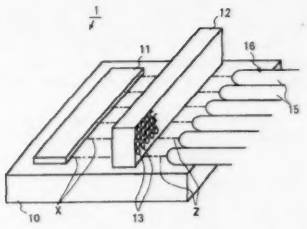
MULTI-CHANNEL OPTICAL COUPLING MODULE

Yoshiki Shibuya, and Takashi Ushikubo, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1999, Appl. No. 253,740
Claims priority, application Japan, Feb. 23, 1998, 10-059034; Sep. 24, 1998, 10-269909
Int. Cl. G02B *6/36*
U.S. Cl. 385—89 **23 Claims**

1. An optical coupling module comprising:

a substrate having a mounting surface;



a plurality of light emitting devices fixed on said mounting surface of said substrate, said light emitting devices being operable to emit light in a first direction substantially parallel to said mounting surface of said substrate;

a fiber optical plate fixed on said mounting surface of said substrate, said fiber optical plate including a plurality of first optical fibers, each of said first optical fibers being arranged along said first direction so as to receive the light emitted by said light emitting devices; and

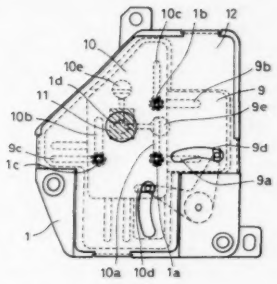
a fiber ribbon fixed on said mounting surface of said substrate, said fiber ribbon including a plurality of second optical fibers, each of said second optical fibers being arranged along said first direction so as to receive the light emitted by said light emitting devices through said first optical fibers.

US 6,340,252 B1

LIGHT-QUANTITY CONTROLLING DEVICE AND APPARATUS USING THE SAME

Kenji Kawano, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 2000, Appl. No. 590,191
Claims priority, application Japan, Jun. 14, 1999, 11-167132
Int. Cl. G03B *9/08;9/40;9/02*
U.S. Cl. 396—450 **32 Claims**



1. A light-quantity controlling device comprising:

a driving source;

a first light-quantity controlling member driven by said driving source, and having a first elongated opening extending in a direction of movement of said first light-quantity controlling member;

a second light-quantity controlling member driven by said driving source in a direction substantially perpendicular to the direction of movement of said first light-quantity controlling member, and having a second elongated opening extending in the direction of movement of said second light-quantity controlling member; and

a supporting member configured to support said first and second light-quantity controlling members, said supporting member having an opening therein,

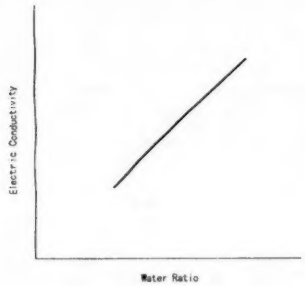
wherein said first and second elongated openings intersect each other at the opening provided in said supporting member when said first and second light-quantity controlling members are driven by said driving source.

US 6,340,253 B1

RESIST PEELING SYSTEM AND CONTROL METHOD OF A RESIST PEELING SOLUTION

Seiji Muranaka; Hiroshi Tanaka, and Yoshiyuki Hori, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 2000, Appl. No. 610,656
Claims priority, application Japan, Feb. 10, 2000, 12-033789
Int. Cl. G03D *5/00*
U.S. Cl. 396—611 **13 Claims**



1. A resist peeling system for peeling resist residue adhering on a semiconductor wafer by using a resist peeling solution composed of multiple components, said resist peeling system comprising:

a peeling solution tank for storing said resist peeling solution;

an electric conductivity monitor for monitoring the electric conductivity of said resist peeling solution;

a means for estimating the components ratio in said resist peeling solution on the basis of said electric conductivity; and

a component adding mechanism for adding, when a component of said resist peeling solution is estimated to be insufficient on the basis of the result estimated by said estimating means, a suitable amount of the component estimated to be insufficient to said resist peeling solution, said component adding mechanism comprises a continuously replenishing mechanism for continuously adding the component estimated to be insufficient to said resist peeling solution and an intermittently replenishing mechanism for intermittently adding a new resist peeling solution or the component estimated to be insufficient, thereby compensating the loss of said resist peeling solution due to carry-out of said resist peeling solution by adhesion thereof on said semiconductor wafer.

US 6,340,254 B1

IMAGE FORMING APPARATUS WITH AN IMPELLING ROLLER TO BE PRESSED AGAINST A PLATEN ROLLER

Kinya Ono, Ibaraki-ken, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Apr. 28, 2000, Appl. No. 559,666
Claims priority, application Japan, May 10, 1999, 11-128795
Int. Cl. B41J *11/16;11/18;25/304;* **B41F** *15/00*
U.S. Cl. 400—120.16 **11 Claims**

1. An image forming apparatus comprising:

a platen roller;

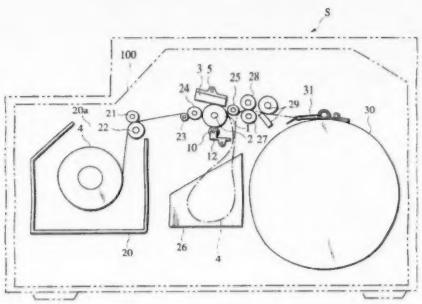
a head to be pressed against the platen roller, and forming an image onto a recording medium;

a first impelling member impelling so as to press the head against the platen roller;

an impelling roller to be pressed against the platen roller;

a second impelling member impelling so as to press the impelling roller against the platen roller; and

a pressure contact releasing mechanism resisting an impelling force of the second impelling member to hold the impelling roller in a waiting position in which the impelling roller does not press against the platen roller;



wherein while the head is pressed against the platen roller by use of the first impelling member and the recording medium supplied between the head and the platen roller is pressed, and while the impelling roller is pressed against the platen roller by use of the second impelling member, the recording medium is transported as the image is formed thereonto; and

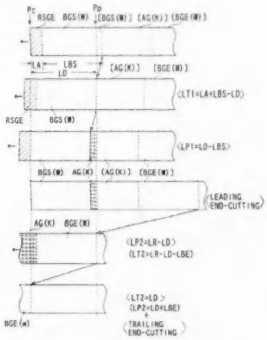
wherein the pressure contact releasing mechanism resists an impelling force of the first impelling member to hold the head in a position in which the head does not press against the platen roller.

US 6,340,255 B1

TAPE PRINTING METHOD TO ALLOW FOR REMOVAL OF EXCESS TAPE IN A BACKGROUND ENVIRONMENT

Yoshiharu Konishi, and Hitoshi Hayama, both of Shioziri, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 20, 2000, Appl. No. 488,733
Claims priority, application Japan, Jan. 21, 1999, 11-013615 P
Int. Cl. B41J *3/42*
U.S. Cl. 400—615.2 **21 Claims**



1. A method of controlling a tape printing apparatus that prints a print image composed of a main image and a background image forming a background of said main image, on a tape which is a printing object, and cuts off a printed portion of said tape on which said print image is printed to thereby form a label, the method comprising the steps of:

selectively setting one of a blank image without any image to be printed, and a ground image providing at least one of a ground color of said tape and a background pattern of said tape, to said background image;

carrying out a leading end-cutting operation for cutting said tape at a leading edge of said print image;

printing said print image by a main printing operation; and

carrying out a trailing end-cutting operation for cutting said tape at a trailing edge of said print image,

wherein when said ground image was set to said background image of an immediately preceding label formed last time, said leading end-cutting operation for a present label to be formed this time is carried out by cutting said tape at a position located at least a predetermined extra print length LA rearward of a leading edge of said tape (LA=LAE+α, wherein LAE represents a predetermined trailing extra print length defined as a length of a portion which extends from a trailing edge of said printed portion and on which said ground image continuing from said background image has been printed by an extra printing operation during preparation of said immediately preceding label, and α represents a predetermined value of length equal to or larger than 0).

US 6,340,256 B1

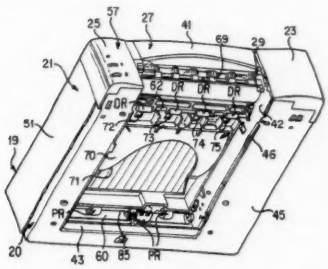
MEDIA CHANNEL AND METHOD OF CLEARING MEDIA JAMS

Kerry N McKay; Junji Yamamoto, both of San Diego; James M Osmus, Escondido; Caroline Zepeda, S. P.; Mark A Hay, Poway; Victor T Escobedo, Bonita, and Daniel S Kline, Encinitas, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 5, 2000, Appl. No. 478,056

Int. Cl. B41J *11/58*

U.S. Cl. 400—624 **14 Claims**



1. A low profile stackable printer, comprising:

a base member supports in a front portion of the printer a printbar and associated printheads to provide a user with easy printhead access;

said base member having a U-shaped open bottom in plan view of sufficient height, width, and depth dimensions for receiving at a bottom portion thereof a removable cassette having an input tray and an output tray;

a channel member mounted within said open bottom for supporting from below sheets of media passing from said input tray to said output tray along a U-shaped media path;

said input tray helping to define a straight leg portion of said media path and said channel member helping to define another straight leg portion of said media path; and

a rectangular shaped plate disposed in a portion of said media path between a rear pick roller assembly and a front drive roller assembly;

said plate having a centrally disposed media access cutout for providing access to said media path to facilitate the removal of media jams therein.

US 6,340,257 B1

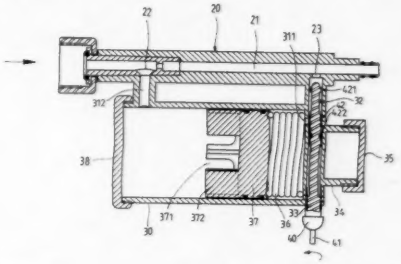
CLEAN DETERGENT PROVIDING DEVICE FOR CLEANING TOOLS

Hsieh Chia-Yi, No. 357-2, Chung Hua Road, Wu-Chi Town, Taichung Hsien, and Chen He-Jin, No. 17, Alley 33, Lane 24, Sec 3, Chung Yang Road, Lung-Ching Hsiang, Taichung Hsien, both of Taiwan

Filed Apr. 11, 2001, Appl. No. 829,926

Int. Cl. A47L *13/22*

U.S. Cl. 401—42 **4 Claims**



1. A clean detergent providing device for a cleaning tool, comprising:

a tube having a first end thereof adapted to be connected to a handle of the cleaning tool, and a second end of said tube adapted to be connected to a mophead, a first aperture and a second aperture respectively defined radially through said tube, and

a tank connected to said tube with a first connection member and a second connection member connected between said tank and said tube, said first connection member communicating with said first aperture and an interior of said tank, said second connection member communicating with said second aperture and extending radially through a first end of said tank, a hole defined through said second connection member and communicating with said tank and said second connection member, a valve movably received in said second connection member and movably sealing said second aperture and said hole, a piston movably received in said tank and a spring biased between an end plate and said piston, a cap connected to a second end of said tank and retaining said piston, said first connection member communicating with a space between said cap and said piston.

US 6,340,258 B2

DISPENSER FOR DISPENSING A STICK OF PRODUCT

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Jul. 12, 1999, Appl. No. 350,911

Claims priority, application France, Jul. 10, 1998, 98 08936

Int. Cl. A45D *40/06*

U.S. Cl. 401—87 **47 Claims**

1. A dispenser for dispensing a stick of product, comprising:

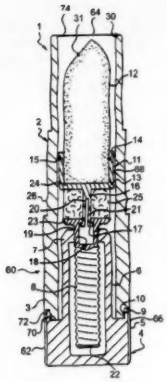
a holder configured to hold the stick of product;

a housing containing the holder, the housing having a first end, a second end, and an opening in the first end, and the housing being configured to move the holder in a first direction toward the opening to allow dispensing of the product and in a second direction away from the opening to allow storage of the product;

a removable closure including a sealing element configured to sealably close the opening during storage of the product;

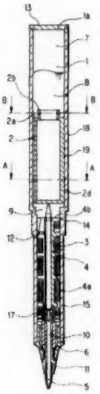
a sealing member sealing at least a portion of the housing between the holder and the opening from at least a portion of the housing between the holder and the second end; and

an elastic member between the holder and the second end of the housing, the elastic member being configured to deform and thereby allow for movement of the holder in the second



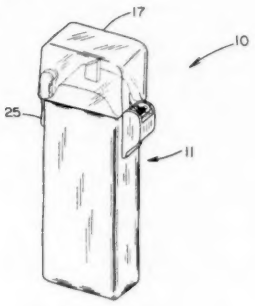
direction when excessive pressure is formed between the holder and the opening.

US 6,340,259 B2
DIRECT-FEED TYPE WRITING IMPLEMENT
Yosuke Mito, Yokohama, and Kazuhiko Furukawa, Kanagawa, both of Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 15, 2000, Appl. No. 738,938
Claims priority, application Japan, Dec. 16, 1999, 11-357279
Int. Cl. B43K *5/18*
U.S. Cl. 401—198 **22 Claims**



1. A direct-feed type writing implement comprising:
a point assembly having a writing point at the tip thereof;
an ink tank directly storing a relatively low viscosity ink having a viscosity of 2 to 100 mPa·S at room temperature;
an ink collector for adjusting the internal pressure in the ink tank by utilizing capillarity;
a feeder means including a center core, for feeding the ink from the ink tank to the writing point; and
a duct pipe connecting the ink collector and the ink tank,
characterized in that the ink is supplied to the center core as the ink feeder means only through the duct pipe.

US 6,340,260 B1
MARKER ASSEMBLY HAVING HINGED CAP
Kevin P. Dao, 823 S. Dennis St., Santa Ana, Calif. 92704
Filed Sep. 29, 2000, Appl. No. 675,134
Int. Cl. B43K *5/00*
U.S. Cl. 401—202 **8 Claims**



8. A marker assembly comprising:
a housing having an interior for holding ink, said housing having an upper end;
a wick member coupled to said housing, said wick member extending into said interior, said wick member having a writing tip extending outwardly from said housing for dispensing ink through said wick member;
a cap member hingably coupled to said housing, said cap member being pivotable between a closed position defined by said cap member covering said wick member and an open position defined by said cap member being pivoted away from said wick member for permitting dispensing of ink onto a recipient surface by said writing tip of said wick member;
a cap biasing member for holding said cap member in said open position during use;
a clip member for selectively holding said cap member in said closed position;
said cap member having a catch portion;
said clip member being pivotally coupled to said housing, said clip member having a first end for engaging said catch portion of said cap member whereby said cap member is prevented from being pivoted into said open position by said cap biasing member when said first end of said clip member is engaged to said catch portion;
said clip member including a second end opposite said first end, said second end being positioned in spaced relationship to an outer surface of said housing when said first end is engaged to said catch portion whereby depression of said second end such that said second end is moved towards said outer surface of said housing disengages said first end from said catch portion whereby said cap biasing member pivots said cap member into said open position;
said cap member being transparent for permitting visual inspection of said wick member when said cap member is in said closed position;
said writing tip of said wick member having a substantially rectangular cross-section for facilitating writing a line having a first width when said writing tip is moved across the recipient surface transverse to a length of said rectangular cross-section and writing a line having a second width when said writing tip is moved across a recipient surface transverse to a width of said cross-section;
said housing having an upper surface, said upper surface having an outer perimeter edge and a raised interior portion;

said writing tip extending upwardly from said raised interior portion of said upper surface for facilitating application of said writing tip to the recipient surface for facilitating use of said marker assembly; and

a rubber seal being coupled to said outer perimeter edge, the rubber seal being adapted to engage said cap member when said cap member is in said closed position for preventing evaporation of said ink when not in use.

US 6,340,261 B1

BALL-POINT PEN

Kazuhiko Furukawa, Kanagawa, Japan, assignor to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

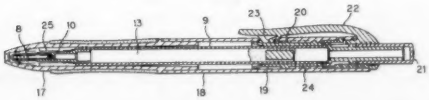
PCT No. PCT/JP98/04684, § 371 Date May 26, 2000, § 102(e) Date May 26, 2000, PCT Pub. No. WO99/24266, PCT Pub. Date May 20, 1999

PCT Filed Oct. 16, 1998, Appl. No. 530,821

Claims priority, application Japan, Nov. 6, 1997, 9-319175

Int. Cl. B43K *7/10*

U.S. Cl. 401—216 **6 Claims**



1. A clicking-type ball-point pen having a front opening from which a writing portion can be protruded at a front end of a barrel cylinder, and a click bar serving as a protruding pushing portion at a rear end, whose ball rotatably fitted loosely in the state of protruding outside from the front end is restricted in the back and forth movement by a caulking portion at a front end and by a ball seat at a rear end, comprising:

a point assembly having an ink hole for leading the ink from the rear end side;

an ink storing tube for directly storing a medium viscosity ink whose ink viscosity at a normal temperature (23° C.) is in a range of from 10 cp to 5000 cp;

a channel groove constituted by a plurality of grooves communicating the ball seat and the ink hole, which is not penetrated through in the longitudinal direction; and

an elastic body installed in a state that it cannot be pulled out such that it pushes the ball at the point directly or indirectly via a movable member at all times; and accommodating a writing element serving as a writing body within the barrel cylinder, movably in the back and forth direction;

wherein the following relation:

$$20 \cdot W < P < 75 \cdot W$$

is satisfied between a projection area W (mm^2) of a diameter of the writing ball and a pushing force P (g) of the elastic body; and

wherein the writing element is constructed such that it is urged rearward at all times by a return spring; and the following relation:

$$50 \cdot R < S < (50 \cdot R + 20 \cdot P)$$

is satisfied among a ball pushing force P (g) within the point assembly and a pushing force S (g) of the return spring and a weight R (g) of the writing element.

US 6,340,262 B1

WRITING IMPLEMENT WITH AN INK COLLECTOR

Motohiro Komiya, Tokyo, and Hisashi Iida, Yokohama, both of Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

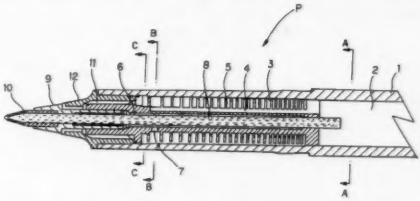
PCT No. PCT/JP99/01568, § 371 Date Sep. 21, 2000, § 102(e) Date Sep. 21, 2000, PCT Pub. No. WO99/50079, PCT Pub. Date Oct. 7, 1999

PCT Filed Mar. 26, 1999, Appl. No. 646,940

Claims priority, application Japan, Mar. 26, 1998, 10-096926

Int. Cl. B43K *5/02*

U.S. Cl. 401—224 **1 Claim**



1. A direct ink storage type writing implement with an ink collector, comprising:

an ink chamber disposed at a rear part of a barrel cylinder for directly storing the ink; and

an ink collector mounted at a front part of the barrel cylinder, characterized in that the ink collector is formed with a passage hole therein in which an ink conduit core for conveying the ink from the ink chamber to a pen point is provided while a flange on the ink collector is formed with air holes that communicate with the passage hole and the passage hole is greater in diameter than the ink conduit core, creating a space between the passage hole and the ink conduit core, and the air holes are formed in the space and in a foremost part of the collector where a wide retaining groove is arranged.

US 6,340,263 B1

FASTENING OF A TUBE PLATE

Claus Fleischer, Buehl, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

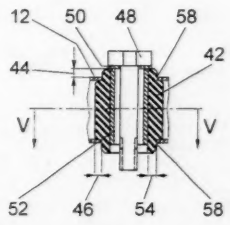
PCT No. PCT/DE99/02137, § 371 Date Mar. 21, 2000, § 102(e) Date Mar. 21, 2000, PCT Pub. No. WO00/05109, PCT Pub. Date Feb. 3, 2000

PCT Filed Jul. 10, 1999, Appl. No. 509,094

Claims priority, application Germany, Jul. 23, 1998, 198 33 158

Int. Cl. F16D *1/12*

U.S. Cl. 403—151 **7 Claims**



1. A fastening of a tube mounting (**10**) for a wiper system on a vehicle body, comprising a mounting tube (**12**) and a rubber-elastic coupling element (**42**), the mounting tube having at least one fastening bore (**58**) extending transversely through the mounting tube, the rubber-elastic coupling element having a hole (**56**) for a screw received therein and being inserted into the fastening bore (**58**), the coupling element having a contour conforming to an

internal contour of the mounting tube in the region of the fastening bore (**58**), the coupling element protruding through openings (**60**) in the fastening bore by a projecting length (**44**) and overlapping the openings (**60**) inside the mounting tube on both sides of the coupling element relative to an axis of the coupling element.

US 6,340,264 B1

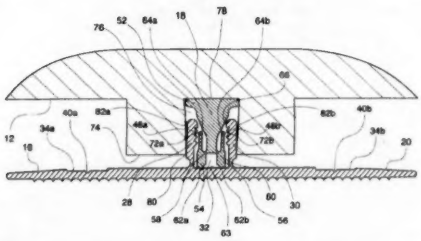
COUPLING ASSEMBLY, CONNECTING MEMBER AND ARTICLES MANUFACTURED THEREFROM

Thomas J. Nelson, Belton, Tex., assignor to Premark RWP Holdings, Inc., Wilmington, Del.

Filed Mar. 26, 1999, Appl. No. 277,184

Int. Cl. F16B *12/36*

U.S. Cl. 403—297 **29 Claims**



1. A coupling assembly for securely coupling a first article to a second article, the coupling assembly comprising:

a connecting member selectively coupled to a track member;

the track member including first and second upwardly extending flanges defining a channel;

the connecting member shaped and dimensioned for secure attachment within the channel defined by the upwardly extending flanges; and

wherein the connecting member includes first and second expansion members and a downwardly extending central spike positioned between the first and second expansion members, the first and second expansion members move outwardly as the connecting member is forced downwardly within the channel, and the central spike is moved downwardly between the first and second expansion members, to securely couple the connecting member within the track member and to force the first and second upwardly extending flanges outwardly into engagement with the first article such that the first article is securely coupled to the track member.

US 6,340,265 B1

CABLE END FASTENING DEVICE FOR A VEHICULAR REMOTE CONTROL CABLE

Kenichi Suzuki; Toyokazu Tsuge, and Kazutaka Awata, all of Nagoya, Japan, assignors to Chuo Hatsujo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 22, 1999, Appl. No. 468,880

Claims priority, application Japan, Dec. 22, 1998, 10-365163; Dec. 16, 1999, 11-357460

Int. Cl. F16C *1//12*

U.S. Cl. 403—316 **9 Claims**

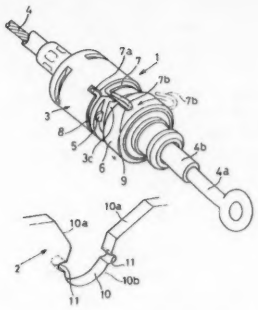
1. A cable end fastening device comprising:

a tubular socket member (**3**) having a male thread portion (**3***b*) through which an inner cable (**4**) passes;

a bracket (**2**) having a notched opening (**10**) through which said socket member (**3**) is provided;

a nut member (**6**) mounted on said male thread portion (**3***b*) to be tightly against an outer peripheral area (**10***b*) of said notched opening (**10**) of said bracket (**2**);

an urging member provided to urge said nut member (**6**) in such a direction as to always tighten said nut member (**6**); and



said socket member (**3**) having a raised portion (**12**) to temporarily loosen said nut member (**6**) by pinching said raised portion (**12**) and one end of said urging member before fully tightening said nut member (**6**) against an outer peripheral area (**10***b*) of said notched opening (**10**).

US 6,340,266 B1

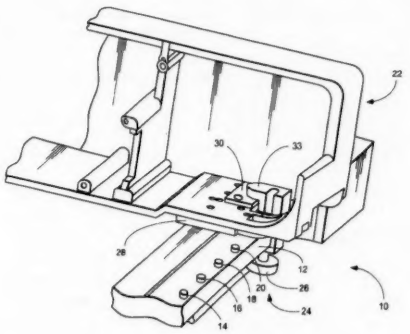
MICRODEVICE FEEDER TO ASSEMBLY LINE HOLDING CONNECTOR SYSTEM

Lev M. Bolotin, Kirkland; Robert Bruce Hubler, Seattle; Bryan D. Powell, Maple Valley, and Janine Whan-Tong, Woodinville, all of Wash., assignors to Data I/O Corporation, Redmond, Wash.

Filed Jan. 18, 2000, Appl. No. 484,190

Int. Cl. B25G *3/20;* **F16B** *1/00*

U.S. Cl. 403—373 **18 Claims**



1. A holding connector system comprising:

a first structure;

a second structure having a plurality of alignment pins,

a connector body having an opening provided therein for engaging one of the plurality of alignment pins, said connector body having a portion provided therein for engaging said connector body with said second structure, and said connector body having engagement means for holding said first structure between said connector body and said second structure;

said first structure having means for aligning said first structure with said second structure using another of the plurality of alignment pins, said first structure having means for engaging a further one of the plurality of alignment pins distal from said another of the plurality of alignment pins; and

means for securing said connector body to said second structure.

US 6,340,267 B1

CONCRETE BLOCK, IN PARTICULAR FOR PAVING A PETROL STATION OR THE LIKE

Karl Kortmann, Am Werkshorn 21, 48465 Schuettorf, Germany

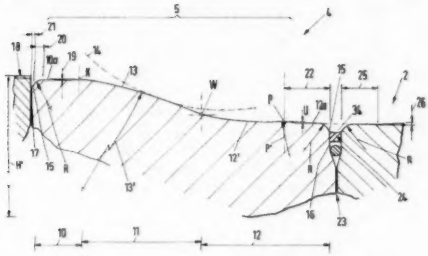
PCT No. PCT/EP97/01760, § 371 Date Oct. 1, 1998, § 102(e) Date Oct. 1, 1998, PCT Pub. No. WO97/38168, PCT Pub. Date Oct. 16, 1997

PCT Filed Apr. 9, 1997, Appl. No. 155,659

Claims priority, application Germany, Apr. 11, 1996, 296 06 557 U; Dec. 19, 1996, 296 22 083 U

Int. Cl. E01C *11/22*

U.S. Cl. 404—2 8 Claims



1. A construction block comprising:

a block having as a top surface a contoured support surface, and first and second side surfaces opposing one another;

said contoured support surface having an upper surface region, a central surface region which is inclined relative to horizontal to form a ramp, and a lower surface region;

a first apical portion at a junction of said upper surface region and said central surface region, said first apical portion being disposed higher than remainders of said upper surface region and said central surface region;

said upper surface region having at least an upper region depressed portion extending substantially horizontally flat from said first apical portion toward said first side surface; and

said lower surface region having a gutter portion juxtaposed to said central surface region at a first side thereof and extending to and joining a lower region depressed portion via a second apical portion, apical with respect to at least said lower region depressed portion, said lower region depressed portion extending substantially horizontally flat from than said second apical portion toward said second side surface and being lower than said second apical portion.

US 6,340,268 B1

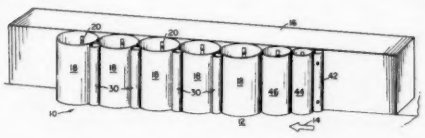
IMPACT ATTENUATING BARRIER WALL

Dean C. Alberson, 9191 Hensarling La., Bryan, Tex. 77808; D. Lance Bullard, Jr., 21 Ranchero Rd., College Station, Tex. 77845, and John F. Carney, III, 15 Regent St., Worchester, Mass. 01609

Filed Apr. 6, 1999, Appl. No. 286,450

Int. Cl. E01F *15/00*

U.S. Cl. 404—6 6 Claims



1. An impact attenuating barrier wall extending longitudinally along a roadway and adapted to intercept an errant vehicle leaving the roadway and redirect the vehicle back onto the roadway, said wall comprising fixed obstacle means extending along the roadway, a plurality of first resilient energy absorbing upright cylinders each having a substantially continuous outer cylindrical surface throughout its height, said cylinders arranged in side by side relationship between said obstacle means and said roadway and having inner halves facing said roadway, the inner halves of adjacent cylinders defining gaps therebetween, a plurality of second resilient energy absorbing upright cylinders each having a substantially continuous outer cylindrical surface throughout its height, said second cylinders having a diameter smaller than the diameter of said first cylinders and located within said gaps in connection with said first cylinders, said first and second cylinders having inner edges lying in substantially the same vertical plane extending along the roadway and providing a substantially continuous vertical impact surface along said roadway upon impact by an errant vehicle.

US 6,340,269 B1

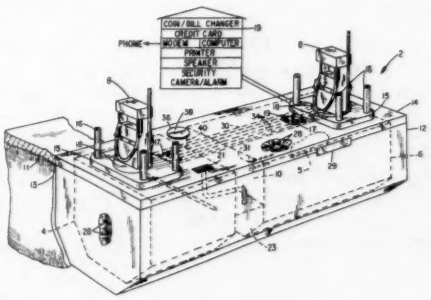
UNDERGROUND STORAGE VAULT

Kelly Stanton, Schenectady, N.Y., and Laura Misiewicz-DelZotto, Ocala, Fla., assignors to Guardian Containment Corp., Schnectady, N.Y.

Filed Aug. 11, 1998, Appl. No. 132,418

Int. Cl. B65G *5/00*

U.S. Cl. 405—53 20 Claims



1. Liquid containment apparatus comprising:

(a) a base having a plurality of sidewalls that project from a bottom wall to define an open cavity;

(b) tank means mounted within said open cavity for containing a liquid;

(c) means for defining a secondary storage space between said tank means and the side and bottom walls of said base,

(d) a cast cover that mounts to said sidewalls to cover the open cavity, wherein a liquid dispensing pump is mounted on the cover and coupled to said tank means, and including a plurality of rigid stanchions that surround said pump and wherein one of said stanchions includes means for venting said base; and

(e) manhole means extending through said cover for accessing the secondary space and wherein the secondary space is sized to admit a person thereto, whereby when said containment apparatus is buried and said cover is mounted substantially at grade, spillage is confined to said base.

US 6,340,270 B2

APPARATUS AND METHOD FOR THE LONGITUDINAL SPLITTING OF PIPES LAID UNDERGROUND

Franz-Josef Püttmann, Lennestadt, Germany, assignor to Tracto-Technik Paul Schmidt Spezialmaschinen, Lennestadt, Germany

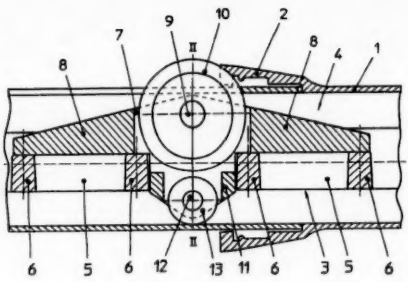
Continuation of application No. 09/349,649, filed on Jul. 8, 1999, now abandoned. This application Apr. 2, 2001, Appl. No. 824,413.

Claims priority, application Germany, Jul. 11, 1998, 198 31 190

Int. Cl. F16L *55/18;* B23K *37/02*

U.S. Cl. 405—184.3 24 Claims

1. An apparatus for the longitudinal splitting of pipes laid underground, comprising a carriage in which at least one rotatably



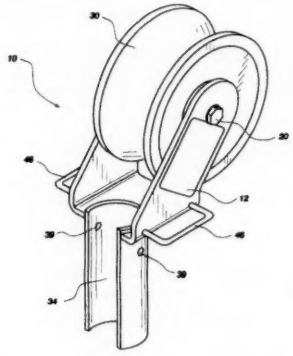
cutting wheel and at least one support roller are located above one another, and pull and/or push linkage which is connected in a form-fitting manner to the carriage.

US 6,340,271 B1

CONDUIT CABLE FEEDING SHEAVE

Derek Carlson, Hooper; Kenn Dayton, Salt Lake City; Russ Vance, West Jordan, and George Vent, Sandy, all of Utah, assignors to Wireline Technologies, Inc., North Salt Lake, Utah

Provisional application No. 60/122,154, filed on Feb. 26, 1999.
This application Feb. 25, 2000, Appl. No. 513,159.
Int. Cl. F16L *3/00*
U.S. Cl. 405—184.4 **18 Claims**



1. A conduit sheave assembly comprising:

a frame structure;

an axle assembly disposed within the frame structure;

a sheave wheel sized to fit over the axle assembly, said wheel being fabricated of a durable polymeric material;

a tubular arm affixed to the frame extending along a line substantially tangential to the wheel, wherein said arm has a slot extending along its length such that it has a C-shaped cross-section and wherein said arm has an exterior diameter sized to fit within a conduit pipe; and

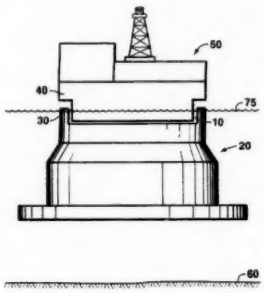
a locking mechanism associated with the tubular arm for temporarily securing the conduit sheave assembly within the conduit pipe.

US 6,340,272 B1

METHOD FOR CONSTRUCTING AN OFFSHORE PLATFORM

Karl H. Runge, Houston, and George F. Davenport, Cypress, both of Tex., assignors to ExxonMobil Upstream Research Co., Houston, Tex.

Provisional application No. 60/115,085, filed on Jan. 7, 1999.
This application Jan. 5, 2000, Appl. No. 478,628.
Int. Cl. B63B *35/44*
U.S. Cl. 405—203 **30 Claims**



1. A method for constructing an offshore platform, said method comprising the steps of:

a) constructing a self-floating offshore platform deck structure, the bottom of said self-floating deck structure comprising an upper mating surface;

b) obtaining a self-floating platform substructure, the top of said self-floating platform substructure comprising a lower mating surface;

c) at least partially submerging the platform substructure until there is sufficient clearance to position the self-floating deck structure above said platform substructure;

d) positioning said upper mating surface over said lower mating surface while both said self-floating deck structure and said self-floating platform substructure are floating; and

e) adjusting the buoyancy of at least one platform section so as to create a bearing force, while said upper mating surface and said lower mating surface are located below the water surface, between said upper mating surface and said lower mating surface.

US 6,340,273 B1

SUPPORT STRUCTURE FOR WELLS, PRODUCTION FACILITIES, AND DRILLING RIGS

Tommy Lee Hull, Needville, Tex., assignor to OPE, Inc., Houston, Tex.

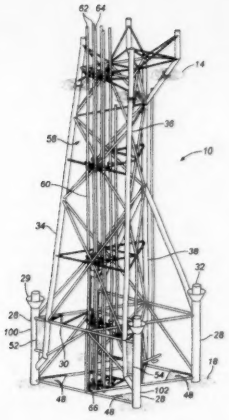
Filed Nov. 7, 1997, Appl. No. 966,098
Int. Cl. E02B *17/00*
U.S. Cl. 405—227 **29 Claims**

1. A support structure for use in supporting a structure for drilling and/or production operations, one end positioned above a body of water and another end below said body of water on a seabed, comprising:

a base having at least four cylindrical base legs engageably positioned in a polygonal pattern on a seabed and a base frame connected to said cylindrical base legs, wherein said cylindrical base legs are adapted to be subsurface;

a jacket having three jacket legs, wherein said jacket legs are interconnected to said base and said jacket legs are adapted to originate below the surface of the water and terminate above the surface of the water; and

a support means for supporting the structure, said support means includes a portion of said first, second, and third jacket legs positioned above the surface of the water;



wherein there is a structure for drilling and/or production operations which has a plurality of well conductors and wherein:

said jacket has at least two of said jacket legs battered, with each of said legs being at an apex of a triangle when said jacket is viewed in plan.

US 6,340,274 B1

INTERFERENCE FIT TYPE CUTTING TOOL

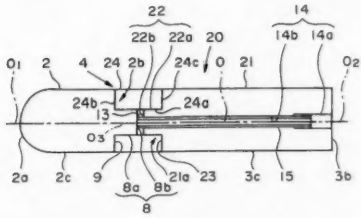
Hiroshi Shimomura, and Hidehiko Nagaya, both of Ishigemachi, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Nov. 15, 1999, Appl. No. 440,282

Claims priority, application Japan, Dec. 9, 1998, 10-350404; Apr. 28, 1999, 11-123211

Int. Cl. B23B *27/00;29/04*

U.S. Cl. 407—34 **11 Claims**



1. An interference fit cutting tool comprising:

a tool;

a tool holding section configured to be connected to the tool in an interference-fit manner; and

a presser section configured to separate said tool from said tool holding section, wherein said tool and said tool holding section have projections, said projections are fitted into and connected by a connecting member, one of said projections and said connecting member has an interference, and a presser member is mounted in said presser section in one of said connecting member, said tool, and said tool holding section so as to press at least one of said tool holding section and said tool.

US 6,340,275 B1

CHAMFERING METHOD

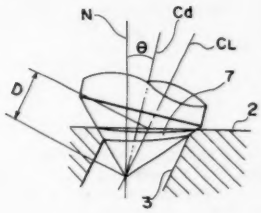
Katsuhiro Amaike, Aichi-ken; Yukiharu Tomita, and Masahiro Nakayama, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 21, 1999, Appl. No. 468,424

Claims priority, application Japan, Jan. 8, 1999, 11-002993

Int. Cl. B23B *35/00*

U.S. Cl. 408—1 R **14 Claims**



1. A method for chamfering a periphery of an opening of an inclined hole formed in a member, comprising:

calculating an approach angle of a chamfering tool, wherein the approach angle lies in a plane which contains both a central axis of said inclined hole and a normal to a tangent to the member which passes through a point of intersection of said central axis of said inclined hole and an outer surface of the member; and

chamfering said opening periphery by aligning the chamfering tool along the calculated approach angle and causing the chamfering tool to cut said chamfer to a desired depth.

US 6,340,276 B1

THREAD-CUTTING APPARATUS WITH REVERSAL OF DIRECTION OF ROTATION

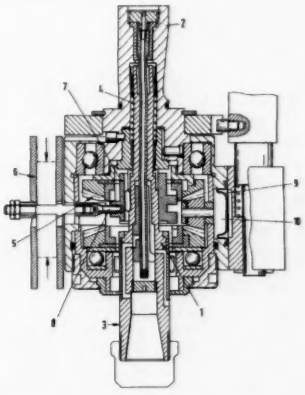
Ruediger Watzke, Neunkirchen, Germany, assignor to EMUGE-Werk Richard Glimpel Fabrik fuer Praezionswerkzeuge vormals Moschkau & Glimpel, Lauf, Germany

Continuation-in-part of application No. 09/085,088, filed on May 26, 1998, now Pat. No. 6,019,552. This application Jan. 19, 2000, Appl. No. 487,114.

Claims priority, application Germany, May 28, 1997, 197 22 257; Jan. 26, 1999, 199 02 901

Int. Cl. B23G *3/02*

U.S. Cl. 408—10 **16 Claims**



1. A thread-cutting apparatus for use with a machine for tapping threads using a tool element, comprising:

a spindle removably secured and in driven connection with said machine;

a grip for securing said tool element on said spindle, said spindle being rotated by said machine in an advancing direction to achieve a given advanced depth;

a sun-and-planet gear with an axially displaceable reversing device for reversing the direction of rotation of said spindle after said given advance depth has been achieved such that said spindle can be withdrawn in a withdrawing direction opposite to said advancing direction; and

an external driving element actuating said reversing device in response to a reversing signal generated by a cam actuator disposed on said grip.

US 6,340,277 B1

SELF-TAPPING SCREW

Gottfried Koenig, Bad Laasphe, and Werner Menz, Tambach-Dietharz, both of Germany, assignors to EJOT Verbindungstechnik GmbH & Co KG, Germany

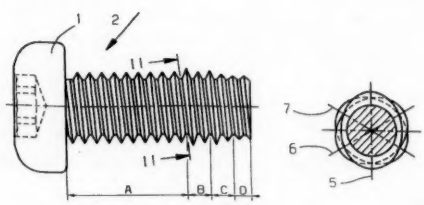
PCT No. PCT/EP99/09661, § 371 Date Aug. 11, 2000, § 102(e) Date Aug. 11, 2000, PCT Pub. No. WO00/36310, PCT Pub. Date Jun. 22, 2000

PCT Filed Dec. 8, 1999, Appl. No. 622,127

Claims priority, application Germany, Dec. 11, 1998, 198 57 311

Int. Cl. F16B *35/04;39/30*

U.S. Cl. 411—416 **11 Claims**



1. Self-tapping screw having an at least partially non-round enveloping curve for the thread and having a penetrating section and a retaining section, characterized in that the penetrating section contains a plurality of successive thread stages which each have at least one thread turn and, along the thread stage, have essentially the same, aligned enveloping curve which runs elliptically, the thread stages with an elliptical enveloping curve being combined such that the major axes of the successive elliptical thread stages, forming a stage group, are offset with respect to one another.

US 6,340,278 B1

GRANULE TRANSFER APPARATUS AND GRANULE SPREADING METHOD

Mitsuo Takeda, Aizuwakamatsu, Japan, assignor to Kabuki Construction Co., Ltd., Tokyo, Japan

PCT No. PCT/JP98/03881, § 371 Date May 14, 1999, § 102(e) Date May 14, 1999, PCT Pub. No. WO99/11887, PCT Pub. Date Mar. 11, 1999

PCT Filed Aug. 31, 1998, Appl. No. 297,267

Claims priority, application Japan, Aug. 29, 1997, 9-249734

Int. Cl. B66C *23/00*

U.S. Cl. 414—140.9 **19 Claims**

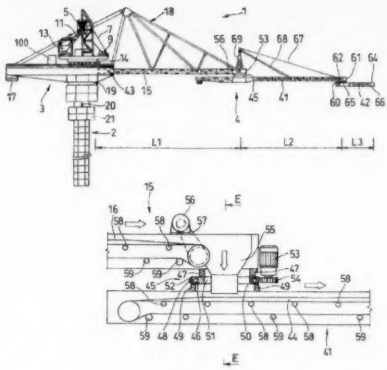
1. A granule transfer apparatus comprising:

a boom body formed of two or more connected boom components each including a granule movement section, a basal end and a distal end;

a stage holding the boom body;

a boom body supporting portion that rotatably mounts the stage;

a stage turner that turns the stage relative to the boom body supporting portion;



a granule feeder provided on the stage that delivers the granule to the basal end of the boom component situated nearest to the stage;

a pivotal connecter located between each of the two or more connected boom components that connects the basal end of one boom component to the distal end of an other boom component;

a boom turner, located between each of the two or more connected boom components, that turns the one boom component with respect to the other boom component;

a junction, located between each of the two or more connected boom components, that transfers the granule from the one boom component to the other boom component; and

a controller that controls the stage turner and the boom turner, wherein the stage turner and the boom turner include a detector detecting the rotational position and speed of the stage and the boom.

US 6,340,279 B1

CONVEYOR SYSTEM WITH A FUNNEL FOR FLOWABLE BULK MATERIAL

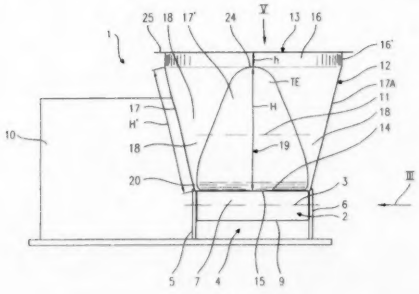
Heinz Wipf, Niederlenz, Switzerland, assignor to Colortronic GmbH, Germany

Filed Jan. 6, 2000, Appl. No. 479,325

Claims priority, application Germany, Jan. 7, 1999, 199 00 176

Int. Cl. B65G *1/00*

U.S. Cl. 414—326 **20 Claims**



1. A conveyor apparatus for flowable bulk material, said conveyor apparatus comprising a conveyor (**2**), a conveyor housing (**4**) for enclosing said conveyor (**2**), said conveyor housing (**4**) including an upwardly facing housing inlet (**15**) having four inlet edges forming together four housing inlet corners, a funnel (**12**) for feeding bulk material into said conveyor housing (**4**) through said

housing inlet (**15**), said funnel (**12**) comprising a circular funnel inlet (**13**) and a funnel outlet (**14**) fitting said housing inlet (**15**), said funnel (**12**) further comprising a cylindrical wall section (**16'**) with an axial width (h) surrounding said circular funnel inlet (**13**), and four lateral plane wall sections (**17'**, **17"**; **17**, **17A**) forming a first pair (**17**, **17A**) and a second pair (**17'**, **17"**) of lateral plane wall sections, said first and second pairs of lateral plane wall sections having upper wall ends (TE) connected to said cylindrical wall section (**16"**), wherein said lateral plane wall sections forming a pair are positioned diametrically opposite each other relative to a vertical funnel axis (**19**), said four lateral plane wall sections having lower wall ends (**21**, **22**) wider than said upper wall ends (TE), said wider lower wall ends (**21**, **22**) being connected to said four inlet edges of said housing inlet (**15**), said funnel (**12**) further comprising four curved corner wall sections (**18**), each curved corner wall section (**18**) having a wide upper portion (WTP) connected to said cylindrical wall section (**16'**) and a lower portion (**20**) narrower than said upper corner wall portion (WTP), each of said lower narrower corner wall portions (**20**) being connected to one of said four housing inlet corners, wherein said four lateral wall sections (**17'**, **17"**; **17**, **17A**) and said four curved corner wall sections (**18**) are interconnected along junctions to form said funnel (**12**), wherein said four curved corner wall sections have a curved cross-section in a horizontal plane, wherein said lateral plane wall sections have an axial length (H) substantially longer than said axial width (h) of said cylindrical wall section (**16'**).

US 6,340,280 B1

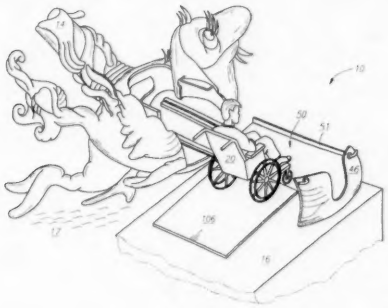
AMUSEMENT RIDE VEHICLE WITH WHEELCHAIR RAMP

Horst Mollick, and Dieter Hopfner, both of Offenberg, Germany, assignors to Universal City Studios, Inc., Universal City, Calif.

Continuation-in-part of application No. 09/082,144, filed on May 20, 1998, now Pat. No. 6,227,790. This application Dec. 30, 1998, Appl. No. 223,528.

Int. Cl. B60P *1/00*

U.S. Cl. 414—537 **16 Claims**



1. An amusement ride vehicle comprising:

a first support beam;

a second support beam opposing the first support beam;

a vehicle body supported by each beam;

a floor deck assembly moveable away from each beam; and

a ramp assembly disposed within and substantially transverse to the floor deck assembly in a stowed position and slideably moveable substantially orthogonally away from the floor deck assembly and then pivotable away from the floor deck assembly for loading or unloading a guest in a wheelchair.

US 6,340,281 B1

METHOD AND APPARATUS FOR POSITIONING A DISK-SHAPED OBJECT

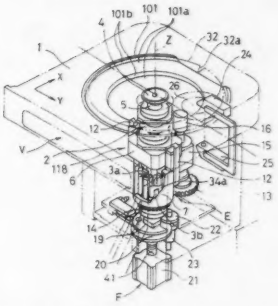
Hideo Haraguchi, Toyonaka, and Izuru Matsuda, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 15, 1999, Appl. No. 291,148

Claims priority, application Japan, Apr. 16, 1998, 10-105271

Int. Cl. B65G *47/24*

U.S. Cl. 414—783 **4 Claims**



1. A method for positioning a disk-shaped object, in which a disk-shaped object is supported by a support member which can be rotated about an axis of rotation and moved in a direction perpendicular to the axis of the rotation in a vacuum vessel, and the support member is moved from outside of the vacuum vessel to position the disk-shaped object, said method comprising:

extending the support member to the outside of the vacuum vessel through an opening in the vacuum vessel and through an opening in a bellows, one end of the bellows being connected to a surface defining the vacuum vessel opening and the other end being connected to an opening in a bearing support, the support member being spaced from the opening and the bellows to provide sufficient play for movement of the support member in the perpendicular direction, and arranging the support member in a bulkhead portion of said bearing support, said bulkhead portion having a roller bearing for rotation of the support member, said bulkhead portion being connected to the other end of the bellows and closing the opening in said bearing support connected to the other end of the bellows;

providing necessary rotation to the support member from the outside of the bulkhead portion via a pair of inside and outside magnetic couplings facing each other on the inside and outside of the bulkhead portion; and

moving the support member in the direction perpendicular to the axis of rotation by moving the bearing support in the direction perpendicular to the axis of rotation with respect to the vacuum vessel.

US 6,340,282 B1

HANDLING DEVICE FOR FEEDING AND/OR REMOVING WORKPIECES

Ralf Bär, Gemmingen, and Georg Deponte, Schwaigern, both of Germany, assignors to Arthur Bar GmbH, Gemmingen, Germany

PCT No. PCT/DE99/00293, § 371 Date Aug. 9, 2000, § 102(e) Date Aug. 9, 2000, PCT Pub. No. WO99/41037, PCT Pub. Date Aug. 19, 1999

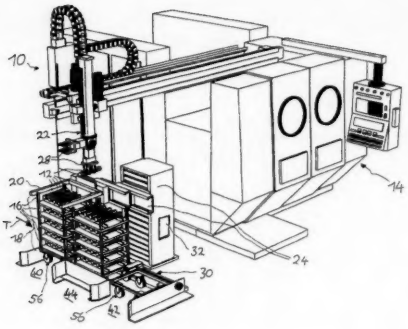
PCT Filed Feb. 4, 1999, Appl. No. 601,985

Claims priority, application Germany, Feb. 10, 1998, 198 05 206

Int. Cl. B65G *59/00*

U.S. Cl. 414—788.7 **14 Claims**

1. A handling device for feeding and/or removing workpieces as unfinished parts to and/or from machining or assembly equipment



for machining and/or assembly purposes and for picking up workpieces as finished parts after machining and/or assembly, the handling device comprising:

(a) workpiece carriers, on which the workpieces are arranged;

(b) workpiece-carrier stack units, which have workpiece carriers arranged one above another;

(c) a workpiece handling unit, which removes the workpieces from the respective workpiece carrier and feeds them to the machining and/or assembly equipment and, after machining/assembly, sets them down again on the workpiece carrier;

(d) a workpiece-carrier handing unit, which feeds the respective workpiece carriers having unmachined workpiece and belonging to a workpiece-carrier stack unit to the workpiece handling unit, from a pick-up position into a standby position and, after its workpieces have been machined, sets this workpiece carriers down from the standby position into a set-down position of a further workpiece-carrier stack unit;

(e) a stack transport unit, which transports the workpiece-carrier stack units within the device in a transport direction (T), specifically from a feed position to which the workpiece-carrier stack units having the unmachined workpieces are fed from outside, as far as a removal position, from which the workpiece-carrier stack units having the machined workpieces are removed to the outside; wherein

between the feed position and the removal position there is at least one further intermediate position for one workpiece-carrier stack unit in each case;

the stack transport unit being constructed such that it can displace at least two workpiece-carrier stack units arranged upstream of the removal position by one position in the transport direction (T) to the removal position;

a control device being constructed such that it activates the components in such a way that

the workpiece-carrier handling unit removes the workpiece carriers having workpieces to be machined in a pick-up position and, after their workpieces have been machined, sets the workpiece carriers down in a set-down position; and

as soon as there is a completely machined workpiece-carrier stack unit in the removal position the pick-up and set-down positions of the workpiece-carrier handling unit are displaced by one position in the direction opposite to the transport direction (T); and

after the workpiece-carrier stack unit has been removed from the removal position, the workpiece-carrier stack units located upstream of the removal position are displaced at least partly by one position in the transport direction (T) by means of the stack transport unit and, at the same time, the pick-up position and set-down position of the workpiece-carrier handling unit is also displaced by one position in the transport direction (T) and, as a result, a workpiece-carrier stack unit having workpiece carriers with unmachined workpieces can be introduced into the feed position.

US 6,340,283 B1

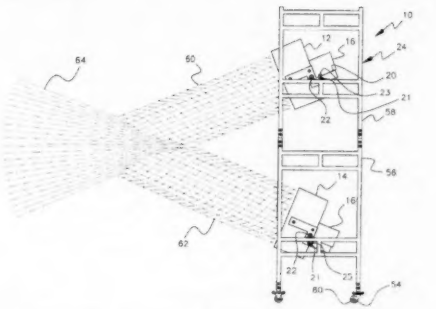
ADJUSTABLE IMPINGEMENT DUAL BLOWER APPARATUS

Thomas A. Hedger, Largo, and Jeff Neal Bullock, Riverview, both of Fla., assignors to Graves Spray Supply, Inc., Clearwater, Fla.

Filed Aug. 31, 2000, Appl. No. 652,886

Int. Cl. F04D *25/16*

U.S. Cl. 415—60 **20 Claims**



1. An adjustable dual blower air impingement blower apparatus mounted on a frame structure having a protective safety grating in front of multiple blades in each of the dual blowers and no other obstruction to a stream of air emanating from each of the dual blowers, the apparatus further comprising:

(a) a means for pivoting each blower to a desired angle towards its mating blower on the frame structure;

(b) a means for locking each blower in place at an angle towards its mating blower, and

(c) each blower having blades turning in a direction opposite the other blower and emitting a solid stream of air towards an impingement area, the impingement of the solid stream of air from each blower creating a triangular type expanding air stream pattern downstream from the impingement area.

US 6,340,284 B1

TURBINE BLADE WITH ACTIVELY COOLED SHROUD-BAND ELEMENT

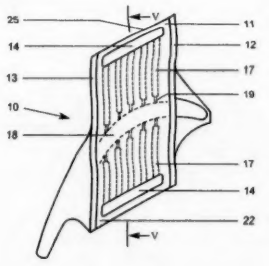
Alexander Beeck, Kussaberg, Germany; Ibrahim El-Nashar, Kloten; Beat Von Arx, Trimbach, both of Switzerland, and Bernhard Weigand, Filderstadt-Sielmingen, Germany, assignors to Alstom (Switzerland) Ltd, Baden, Switzerland

Filed Dec. 23, 1999, Appl. No. 471,410

Claims priority, application Germany, Dec. 24, 1998, 198 60 244; Dec. 24, 1998, 198 60 245

Int. Cl. F01D *5/18*

U.S. Cl. 415—115 **13 Claims**



1. An air-cooled turbine blade which, at the blade tip, has a shroud-band element extending perpendicularly to the longitudinal

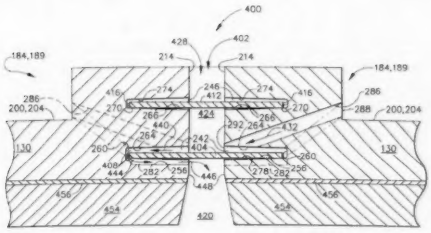
axis of the blade, comprising a plurality of cooling bores passing through the shroud-band element for the purpose of cooling, the cooling bores being connected on the inlet side to at least one cooling-air passage running through the turbine blade to the blade tip and which cooling bores open on the outlet side into the exterior space surrounding the turbine blade, wherein the cooling bores extend from inside to outside in the shroud-band element and substantially parallel to the direction of movement of the blade, and the cooling bores open upstream of the outer margin of the shroud-band element directly into an elongated recess defined within the interior of the shroud-band element common to all cooling bores, which is open toward the exterior space.

US 6,340,285 B1

END RAIL COOLING FOR COMBINED HIGH AND LOW PRESSURE TURBINE SHROUD

Craig Alan Gonyou, Blanchester; Roger Lee Doughty, Cincinnati, and Monty Lee Shelton, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 8, 2000, Appl. No. 590,590
Int. Cl. F04D *31/00*
U.S. Cl. 415—116 **20 Claims**



1. A turbine engine cooling component for a gas turbine engine, which comprises:

(a) a leading edge;

(b) a trailing edge spaced from the leading edge;

(c) a base connected to the trailing and leading edges and having a back surface and an arcuate inner surface;

(d) a pair of spaced opposed axial side panels connected to the leading and trailing edges;

(e) each of the side panels having a lower discourager spline seal slot extending longitudinally from the leading edge to the trailing edge of each side panel that is capable of receiving an edge of a discourager spline seal, each lower slot having at least a bottom wall and a top wall;

(f) each of the side panels having an upper primary spline seal slot spaced above the lower slot and extending longitudinally from the leading edge to the trailing edge of each side panel, each upper slot having at least a bottom wall and a top wall,

(g) a plurality of cooling air passages extending through the base from the back surface thereof and having spaced outlets exiting from at least one of the side panels between the bottom wall of the top slot and the bottom wall of the lower slot;

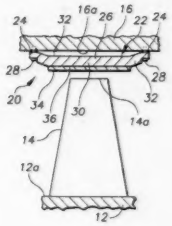
(h) a plurality of spaced air flow pathways along the length of the lower slot and below the bottom wall of the upper slot that are capable of receiving air flowing over and above the discourager seal when positioned in the lower slot and passing the air flow around the edge and beneath the discourager seal.

US 6,340,286 B1

ROTARY MACHINE HAVING A SEAL ASSEMBLY

Mahmut Faruk Aksit, Troy; Raymond Edward Chupp, Glenville, and Osman Saim Dinc, Troy, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1999, Appl. No. 472,916
Int. Cl. F01D *11/08*
U.S. Cl. 415—173.3 **28 Claims**



1. A rotary machine, comprising:

a rotor rotatable about a longitudinal axis and having an outer annular surface;

a plurality of blades mounted on and spaced apart from one another circumferentially about said outer annular surface of said rotor and extending radially outward relative to said longitudinal axis and from said outer annular surface of said rotor to end tips of said blades;

an outer casing having an annular shape and an inner circumferential surface and being stationarily disposed about and spaced radially outwardly from said rotor and said blades thereon so as to define an annular gap between said inner circumferential surface of said casing and said end tips of said blades;

a flexible abradable seal assembly attached on said inner circumferential surface of said casing and disposed within said annular gap between said casing and blade tips such that, during periods of differential growth of said rotor and blades relative to said casing, said flexible abradable seal assembly flexes and abrades in response to contact therewith by said tips of said blades moving with said rotor and thereby clearance between said casing and said rotor blades at said gap is controlled in such manner as to avoid contact by said moving blade tips with said casing;

wherein said flexible abradable seal assembly includes an elongated flexible body having an arcuate shape generally conforming to said annular shape of said inner circumferential surface of said casing, a pair of opposite spaced apart longitudinally extending edge portions spaced respectively upstream and downstream of said end tips of said rotor blades, and a main body portion extending between and interconnecting said opposite edge portions and being disposed outwardly of and aligned with said end tips of said rotor blades, said elongated flexible body having a portion disposed adjacent to said end tips of said rotor blades and being of an abradable material in response to contact therewith by said end tips of said rotor blades; and

wherein said flexible body itself is made of said abradable material;

a securing mechanism for securing said flexible body at said opposite edge portions thereof to said inner circumferential surface of said outer casing.

US 6,340,287 B1

MULTISTAGE CENTRIFUGAL COMPRESSOR IMPELLER FOR MULTISTAGE CENTRIFUGAL COMPRESSOR AND METHOD FOR PRODUCING THE SAME

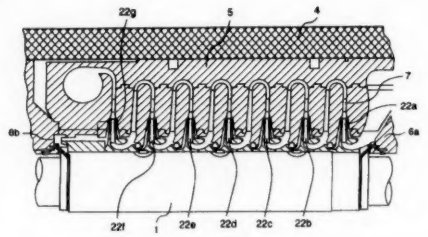
Takashi Eino, Tsuchiura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1996, Appl. No. 597,995

Claims priority, application Japan, Mar. 20, 1995, 7-060369

Int. Cl. F04D *29/44*

U.S. Cl. 415—199.1 **3 Claims**



1. A multistage centrifugal compressor comprising:

a plurality of impellers mounted on a rotary shaft, each of said impellers including a disk, a shroud and a plurality of vanes of three dimensional shape disposed between said disk and said shroud and separated from one another in a circumferential direction, wherein each of the plurality of vanes of one of said plurality of impellers is smaller than each of the plurality of vanes of another of said plurality of impellers; and

a casing for housing said plural impellers, said casing being formed with a suction port and a discharge port, through said suction port a gas is drawn into said compressor, and the gas drawn is compressed in sequence by rotation of each impeller and discharged from said discharge port,

wherein a three-dimensional shape of an entire vane of said one of said plurality of impellers is identical to a three-dimensional shape of a portion of each of said plurality of vanes of said another of said plurality of impellers.

US 6,340,288 B1

HIGH-PRESSURE FAN

Rauli T Hulkkonen, Espoo; Jyri-Markku Vuorenmaa, Helsinki, and Joni A Tallgren, Klaukkala, all of Finland, assignors to ABB Flakt Oy, Espoo, Finland

PCT No. PCT/FI98/00037, § 371 Date Jul. 2, 1999, § 102(e) Date Jul. 2, 1999, PCT Pub. No. WO98/31937, PCT Pub. Date Jul. 23, 1998

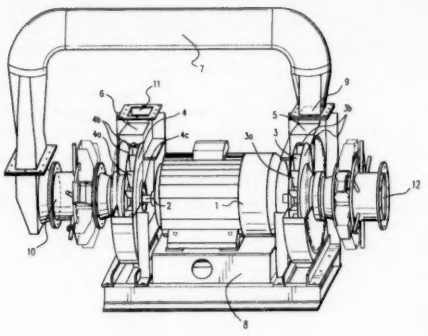
PCT Filed Jan. 16, 1998, Appl. No. 341,107

Claims priority, application Finland, Jan. 17, 1997, 970210

Int. Cl. F04D *29/44*

U.S. Cl. 415—199.1 **4 Claims**

1. A high-pressure fan comprising a blade wheel, a first fan housing surrounding the blade wheel, and an electric motor to operate the blade wheel, said electric motor having a shaft projecting from one end thereof, and wherein said blade wheel substantially consists of carbon-fibre-based composite material, and is



mounted directly, without additional bearings, on said one end of the shaft.

US 6,340,289 B1

SINGLE LEVER POWER CONTROLLER FOR MANNED AND UNMANNED AIRCRAFT

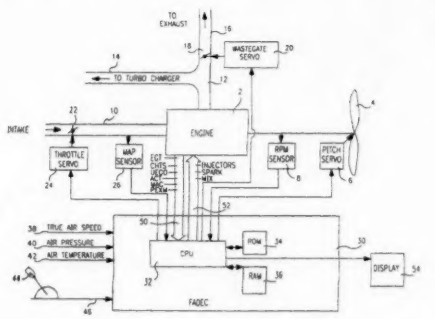
David W. Vos, Boston, Mass., and Benjamin Russ, Catlett, Va., assignors to Aurora Flight Sciences Corporation, Manassas, Va.

Continuation of application No. 09/054,411, filed on Apr. 3, 1998, now Pat. No. 6,171,055. This application Dec. 5, 2000, Appl. No. 729,457.

This patent is subject to a terminal disclaimer.

Int. Cl. B64C *11/34*

U.S. Cl. 416—1 **23 Claims**



1. A single lever power control means for controlling an aircraft powerplant, comprising:

a lever means for generating a pilot thrust command; and

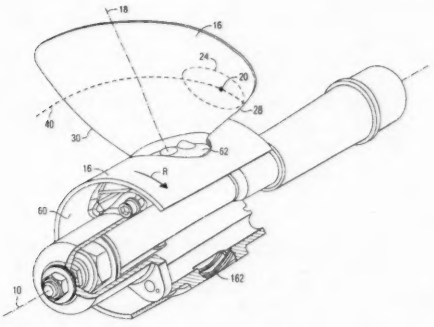
a processor means, coupled to said lever means, for (i) receiving the generated pilot thrust command, (ii) receiving a plurality of detected ambient air conditions, (iii) receiving a plurality of detected powerplant performance parameters, (iv) concurrently determining first and second powerplant control commands based on the received pilot thrust command, the detected ambient air conditions, and the powerplant performance parameters, and (v) outputting first and second output signals respectively corresponding to the first and second powerplant control commands.

US 6,340,290 B1

CONTROLLABLE PITCH PROPELLER WITH A FAIL SAFE INCREASED PITCH MOVEMENT

Carl G. Schott, Fond du Lac, and Roger E. Koepsel, Oshkosh, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Jun. 20, 2000, Appl. No. 597,521
Int. Cl. B63H *1/06*
U.S. Cl. 416—157 R 20 Claims



1. A controllable pitch marine propeller, comprising:

a hub structure attachable to a propeller shaft of a marine propulsion system of a marine vessel for rotation about an axis of said propeller shaft;

a first blade rotatably attached to said hub structure for rotation about a spindle axis, said first blade having a surface which is shaped to create a force having a component generally parallel to said axis of said propeller shaft in response to rotation of said hub structure with said first blade at least partially submerged in water, said first blade being rotatable about said spindle axis, said surface of said first blade having an effective center of pressure located within a zone of pressure centers and at an instantaneous position within said zone of pressure centers determined as a function of both a speed of said marine vessel and a rotational speed of said hub structure about said axis of said propeller shaft, said force having a magnitude determined as a function of both said speed of said marine vessel and said rotational speed of said hub structure about said axis of said propeller shaft, said force acting on said surface of said first blade at said instantaneous position of said center of pressure within said zone of pressure centers, said first blade being shaped to result in said zone of pressure centers being ahead of said spindle axis relative to the direction of rotation of said hub structure under at least a majority of magnitudes of said speed of said marine vessel and said rotational speed of said hub structure about said axis of said propeller shaft under which said propeller is operated;

a controller for selecting a desired pitch of said first blade;

an actuator disposed within said hub structure to cause said first blade to rotate about said spindle axis in response to control signals from said controller selected to achieve said desired pitch of said first blade; and

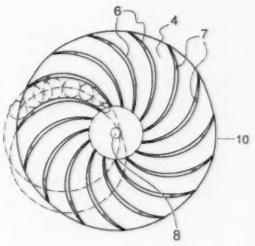
whereby said first blade is moved toward a position of higher pitch in response to hydrodynamic forces on said surface of said first blade, under at least said majority of operating conditions, in the event that said actuator is rendered ineffective to control said pitch of said first blade.

US 6,340,291 B1

HIGH PRESSURE IMPELLER WITH HIGH EFFICIENCY FOR SMALL VOLUME FLOWS FOR RADIAL BLOWERS OF DIFFERENT SIZE

Lothar Reckert, Oldendorfer St. 13, D-29587 Natendorf, Germany

Filed Dec. 10, 1999, Appl. No. 458,314
Claims priority, application European Pat. Off., Dec. 18, 1998, 98124090
Int. Cl. F04D *29/38*
U.S. Cl. 416—185 5 Claims



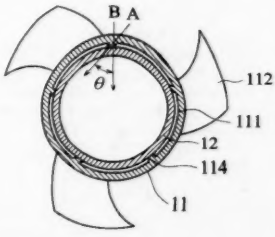
1. An impeller for a radial blower, comprising a cover, a central bore for fixing to a driving shaft, a plurality of impeller blades passing in part spiral manner from an outside circumferential edge to the bore defining impeller blade channels between adjacent impeller blades wherein a cross-section A_k of the impeller blade channels increases from a point at the bore to a point two-thirds of the channel length toward the circumferential edge and in the last third of the channel length towards the circumferential edge becomes smaller or remains constant, and wherein the thickness of the impeller blades increases from a point at the bore to a point along the blade and then decreases to a point at the circumferential edge, and the blades having a blade entry angle β_1 at the bore having a value of >40°.

US 6,340,292 B1

ANTI-FRACTURE FAN STRUCTURE

Te-tsai Chuang; Wei-chen Kuo; Kuo-cheng Lin, and Wen-shi Huang, all of Taoyan, Taiwan, assignors to Delta Electronics, Inc., Taoyan Shien, Taiwan

Filed Jul. 28, 2000, Appl. No. 628,092
Claims priority, application Taiwan, Apr. 8, 2000, 089205615
Int. Cl. F04D *29/18*
U.S. Cl. 416—244 R 5 Claims



1. An anti-fracture fan structure comprising:

a hub having an inner surface formed inside and encircling said hub;

a plurality of blades arranged outside and around said hub; and

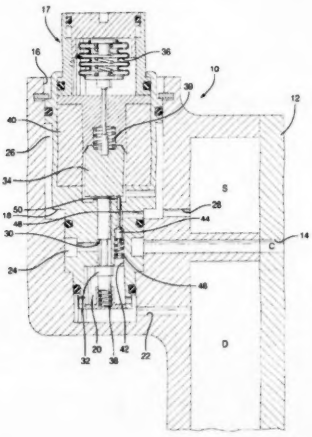
a plurality of ribs projecting from said inner surface of said hub into the inside of said hub, wherein each of said plurality of ribs is not perpendicular to said inner surface of said hub.

US 6,340,293 B1

CLUTCHLESS COMPRESSOR CONTROL VALVE WITH INTEGRAL BY PASS FEATURE

Joseph M. Bona, Williamsville; Michael Jay Burkett, Sanborn, and Theodore R. Cochran, Amherst, all of N.Y., assignors to Delphi Technologies INC, Troy, Mich.

Filed Aug. 25, 2000, Appl. No. 650,096
Int. Cl. F04B *49/24*
U.S. Cl. 417—307 **4 Claims**



1. A capacity control valve (**17**) for use in part of a compressor housing (**10**) having a valve containing bore (**16**) which contains a valve body (**18**) that divides said bore (**16**) into a discrete discharge pressure chamber (**20**) and a discrete suction pressure chamber (**26**), and in which an axially movable rod (**30**) moves back and forth within said valve body (**18**) between a predetermined minimum compressor capacity position and greater than minimum compressor capacity positions, characterized in that,

said valve body (**18**) includes a by pass passage (**42**) connecting said discharge (**20**) and suction (**26**) chambers and,

a shut off valve (**44**) within said by pass passage that is normally biased to a position closing said by pass passage (**42**), when said rod (**30**) is in any greater than minimum compressor capacity position, and which is engaged by said rod (**30**) to open said by pass passage (**42**) when said rod is in said predetermined minimum compressor capacity position.

US 6,340,294 B1

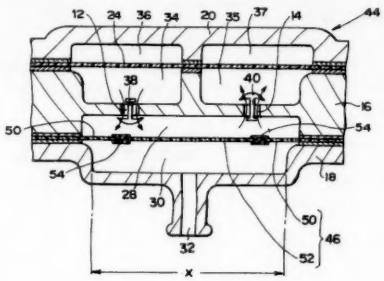
DIAPHRAGM TYPE FUEL PUMP

Kenichi Kubota, and Noriaki Chiba, both of Morioka, Japan, assignors to Mikuni Adec Corporation, Japan

Filed Aug. 28, 2000, Appl. No. 648,466
Claims priority, application Japan, Oct. 27, 1999, 11-304991
Int. Cl. F04B *43/06*
U.S. Cl. 417—395 **4 Claims**

1. A diaphragm type fuel pump comprising: a fuel sucking chamber and a fuel discharging chamber; a first body having a fuel introducing path communicating with the fuel sucking chamber and a fuel discharging path communicating with the fuel discharging chamber; a diaphragm fixed to the first body using a second body; and a pump chamber constituted by the diaphragm and the first body and communicating with the fuel introducing path and the fuel discharging path,

wherein the diaphragm includes an outer diaphragm made of resin and having an opening formed within an effective diameter of the diaphragm, and an inner diaphragm arranged in the



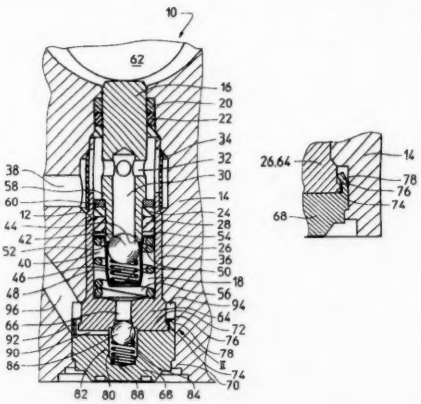
opening of the outer diaphragm, and the outer and inner diaphragms are mutually fixed using an elastic coupling member.

US 6,340,295 B1

PISTON PUMP FOR A VEHICLE BRAKE SYSTEM HAVING RADIAL PLAY BETWEEN A CLOSURE ELEMENT AND A BUSH

Manfred Hauser, Schwieberdingen; Norbert Alaze, Markgroeningen; Dieter Merklein, Kempten; Wolfgang Schuller, Sachsenheim; Julius Bayrhof, Lindenberg; Walter Kremsreiter, Hindelang; Joachim Evertz, Sonthofen; Joerg Zielke, Immenstadt; Ralf Zitzelsberger, Marktoberdorf; Andreas Weh, Durach; Bernd Allenzon, Wiggensbach, and Michael Hellebrandt, Burgberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE98/01670, § 371 Date Sep. 13, 1999, § 102(e) Date Sep. 13, 1999, PCT Pub. No. WO99/06706, PCT Pub. Date Feb. 11, 1999
PCT Filed Jun. 18, 1998, Appl. No. 269,669
Claims priority, application Germany, Jul. 30, 1997, 197 32 770
Int. Cl. F04B *19/00*
U.S. Cl. 417—470 **9 Claims**



1. A method for removing organic and/or inorganic contaminants from an aqueous feed stream comprising contacting said aqueous feed stream with a membrane formed from a porous, crystalline titanium silicate, recovering a permeate rich in water and forming a retentate having a contaminant concentration greater than said aqeous stream, said titanium silicate composed of chains of six oxygen-coordinated titanium octahedra, which chains are connected three dimensionally by tetrahedral silicone oxide units bridging titanosilicate units.

US 6,340,296 B1

SYSTEM FOR PRODUCING OPTICAL DATA CARRIERS

Ronaldus Joannes Cornelis Maria Kok, Eindhoven, Netherlands, assignor to OTB Group B.V., Eindhoven, Netherlands

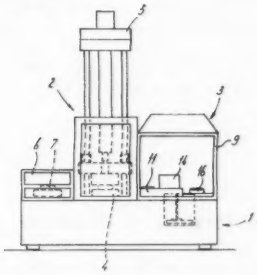
PCT No. PCT/NL97/00672, § 371 Date Jul. 21, 1999, § 102(e) Date Jul. 21, 1999, PCT Pub. No. WO98/27552, PCT Pub. Date Dec. 8, 1997

PCT Filed Dec. 8, 1997, Appl. No. 331,424

Claims priority, application Netherlands, Dec. 19, 1996, 1004837

Int. Cl. B28B *17/00*; B29C *45/17*

U.S. Cl. 425—162 10 Claims



7. A system for producing disc-like data carriers, the system comprising:

an injection molding machine that forms a disc-like substrate and a finishing device that further processes a substrate formed in the injection molding machine, said finishing device comprising first, second, and third processing units that each sequentially perform different operations on the substrate;

a frame that supports said injection molding machine and said finishing device directly adjacent to each other;

a removal arm carried by one of said injection molding machine and said finishing device for transferring a substrate from said injection molding machine to said first processing unit;

a first transfer arm carried by said finishing device for transferring a substrate from said first processing unit to said second processing unit;

a second transfer arm carried by said finishing device for transferring a substrate from said second processing unit to said third processing unit; and

a coupling unit that operates said removal arm and said first and second transfer arms simultaneously so that respective substrates are moved from said injection molding machine to said first processing unit, from said first processing unit to said second processing unit, and from said second processing unit to said third processing unit at the same time.

US 6,340,297 B1

SOLID IMAGING APPARATUS WITH COATING STATION

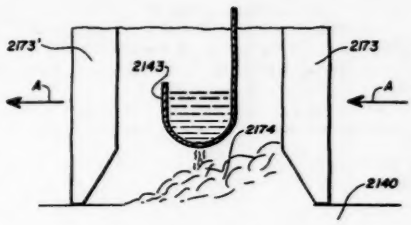
Brian Gregory Chapman, Elkton, Md.; Christian Henning Clausen, Woodbury, N.J.; Daniel James Mickish, Wilmington, and Eustathios Vassiliou, Newark, both of Del., assignors to DSM N.V., Heerlen, Netherlands

Continuation of application No. 08/804,449, filed on Feb. 21, 1997, which is a continuation of application No. 07/884,030, filed on May 18, 1992, now Pat. No. 5,626,919, which is a continuation-in-part of application No. 07/804,269, filed on Dec. 5, 1991, now abandoned, which is a continuation of application No. 07/488,095, filed on Mar. 1, 1990, now abandoned. This application Mar. 31, 2000, Appl. No. 541,025. This patent is subject to a terminal disclaimer.

Int. Cl. B29C *35/08*

U.S. Cl. 425—174.4 12 Claims

1. A solid imaging apparatus, said apparatus including:



(i) a vessel for containing a photoformable composition with a free surface;

(ii) a movable platform disposed within said vessel; and

(iii) a sub-assembly having

(a) two doctor blades; and

(b) a movable dispenser;

wherein said movable dispenser is capable of lifting, at a position between said two doctor blades, an amount of said photoformable composition to a position above said surface.

US 6,340,298 B1

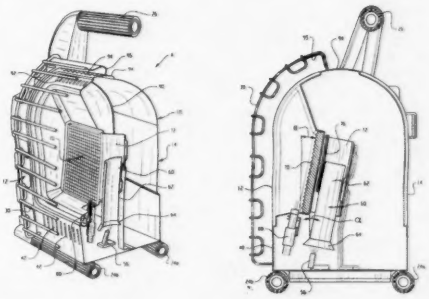
GAS-FIRED PORTABLE UNVENTED INFRARED HEATER FOR RECREATIONAL AND COMMERCIAL USE

Brian S. Vandrak, Highland Heights; John D. DuRoss, Jr., Chagrin Falls, and Allan L. Haire, Garfield Heights, all of Ohio, assignors to Mr. Heater Corporation, Cleveland, Ohio

Provisional application No. 60/169,062, filed on Dec. 6, 1999. This application Dec. 6, 2000, Appl. No. 731,156.

Int. Cl. F24H *1/06*

U.S. Cl. 432—222 20 Claims



1. A portable radiant heater supplied by an associated fuel source comprising:

a housing having a handle for transporting the heater;

a plenum in the housing for receiving fuel from the associated source and mixing fuel with air;

a burner assembly having a radiant surface that communicates with the plenum;

a regulator for limiting the pressure of the associated propane source to approximately eleven inches water column; and

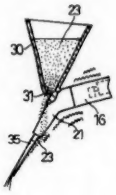
an oxygen depletion system associated with the burner assembly for automatically shutting off the heater at a predetermined oxygen content.

US 6,340,299 B1

DEVICE FOR POURING DENTAL MIXTURE

Yoshiyuki Saito, Towa City Coap Kanaguchi Aoki 702, 9-1, Aoki 5-Chome, Kawaguchi-shi Saitama-ken, Japan, 332-0031

Filed Apr. 21, 2000, Appl. No. 556,674
Claims priority, application Japan, Apr. 21, 1999, 11-113766
Int. Cl. A61C *13/34*
U.S. Cl. 433—80 **8 Claims**



1. A device for pouring a dental mixture having a portion that can be held in one hand, said device comprising:

a main body having a terminal end;

a vibration generating mechanism positioned near said main body for generating vibration to the dental mixture;

a storage section, connected to said main body and in communication with said vibration generating mechanism through said main body, for receiving and storing the dental mixture in order to facilitate pouring of the mixture, said storage section having an orifice, said orifice for permitting the mixture from flowing out the storage section;

vibration transmitting means having a terminal portion and for transmitting vibrations generated from said vibration generating mechanism to said storage section for the mixture; and

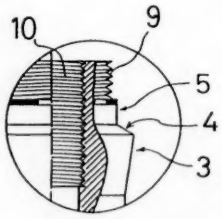
a removable and flexible tip positioned below the orifice for supplying a target for the mixture flowing out the orifice of the storage section.

US 6,340,300 B1

DENTAL IMPLANT

Alejandro Padros Fradera, Barcelona, Spain, assignor to Soadco, S.L., Escaldes-Engordany

Filed Sep. 1, 2000, Appl. No. 653,160
Claims priority, application Spain, Oct. 6, 1999, 9902521 U
Int. Cl. A61C *8/00*
U.S. Cl. 433—174 **2 Claims**



1. Self-tapping dental implant, of the type which is fixed into the upper jawbone, is used as a base for fixing dental prostheses and includes an elongated, cylindrical main body, provided with an external screw thread, of a metallic material for implanting in a jawbone and provided, at its outer end, with a frusto-conical portion (**3**), a larger outer base of which has a protuberance (**5**) of relatively reduced height and an essentially straight prismatic polygonal cross-section, said frusto-conical portion being coaxial to the main body and being provided with a threaded central coaxial hole (**10**) adapted to receive a fixing screw of a dental prosthesis, the lateral sides (**8**) of the prismatic protuberance (**5**) being adapted to be engaged by a tool for threading the implant into a preformed hole on the upper or lower jawbone, characterized in that the outer surface of said prismatic protuberance (**5**) has an outward tubular extension (**6**), coaxial to the main body, and provided with a hole aligned with the central hole (**10**) which allows the fixing screw to pass through and has an outer surface (**8**) which is provided with external threads (**9**) adapted to receive the threads on an inner surface of a base of a pre-prosthetic cap which is also, provided with a through hole which allows the fixing screw to pass through from the prosthesis to the implant, wherein the pre-prosthetic cap is adapted to be fixed solidly by threading onto said external threads (**9**) on said tubular extension (**6**) and covering the protuberance (**5**) without the need for any additional screw.

US 6,340,301 B2

DEVICE FOR HEATING THE TEETH AND USES THEREFOR

Daniel Henry Darnell, 508 Bango Ave., Hanceville, Ala. 35077

Continuation of application No. 09/506,847, filed on Feb. 18, 2000, now Pat. No. 6,254,391, which is a continuation-in-part of application No. 09/247,124, filed on Feb. 8, 1999, now Pat. No. 6,102,705, which is a continuation-in-part of application No. 08/968,802, filed on Nov. 22, 1997, now abandoned. This application Feb. 23, 2001, Appl. No. 791,529.
This patent is subject to a terminal disclaimer.
Int. Cl. A61C *15/00*
U.S. Cl. 433—216 **40 Claims**

1. A device for heating the teeth, comprising:

a) a dental splint having an inner aspect for contacting the front surface of the teeth directly, said splint constructed to cover the entire structure of the teeth but not the gingival tissue;

b) a heating element within said inner aspect of said splint adapted to contact the front surface of the teeth directly and to heat the front surface of the teeth directly;

c) a means for increasing the temperature of said heating element;

d) said splint having a reservoir to hold a fluid treatment solution in contact with the teeth but not in contact with the gingival tissue; and

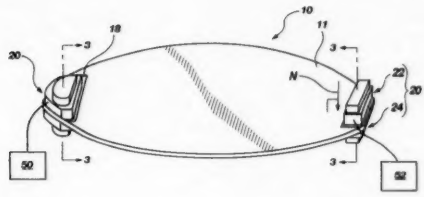
e) said splint constructed to fit entirely within the mouth and to cover the entire structure of the teeth.

US 6,340,302 B1

APPARATUS FOR ESTABLISHING AN ELECTRICAL CONNECTION WITH A WAFER TO FACILITATE WAFER-LEVEL BURN-IN AND METHODS

John W. Ladd, Shepherd, Mont., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 6, 2001, Appl. No. 777,986
Int. Cl. H01R *11/30*
U.S. Cl. 439—40 **12 Claims**



1. A method for establishing an electrical contact with a semiconductor device, comprising:

orienting a first member of an electrical connector in a first position on a semiconductor substrate so as to facilitate communication between a contact that communicates with the semiconductor device and said first member;

positioning a second member of said electrical connector at a second position on said semiconductor substrate, said second position being located opposite said first position; and

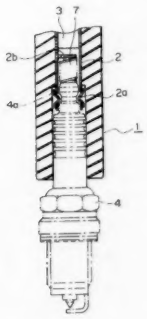
attracting said first and second members to one another such that said first and second members are nonrigidly biased against said semiconductor substrate in directions that are substantially normal to a plane of said semiconductor substrate.

US 6,340,303 B2

HIGH TENSION CONNECTION PORTION STRUCTURE OF AN INGITION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Kazuya Hamada; Shingo Morita; Shigemi Murata, and Mitsuru Koiwa, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 2000, Appl. No. 496,335
Claims priority, application Japan, Sep. 19, 1999, 11-261626
Int. Cl. H01R *13/44;13/502;13/514;13/24;13/627*
U.S. Cl. 439—127 **9 Claims**



1. A high tension connection portion structure of an ignition device for an internal combustion engine, comprising:

a first high tension connection terminal;

a second high tension connection terminal for electrically connecting with said first high tension connection terminal;

a lock structure provided between said first high tension connection terminal and said second high tension connection terminal for restricting the separation therebetween;

a spring member retainer portion formed on an inner wall of said first high tension connection terminal; and

a spring member directly connecting said spring member retainer portion of said first high tension connection terminal and said second high tension connection terminal,

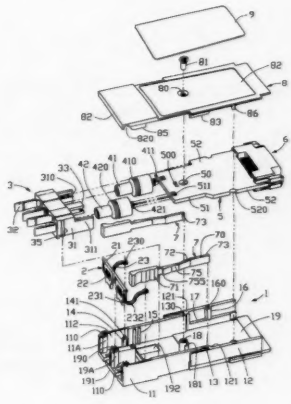
wherein the spring member retainer portion maintains a constant gap between said first high tension connection terminal and said second high tension connection terminal to enable detection of an ionic current.

US 6,340,304 B1

REVERTIBLE SHIELDING DOOR USED IN AN OPTICAL TRANSCEIVER

Dennis B. Jones, Orange, and Eddy Wong, Irvine, both of Calif., assignors to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Jul. 27, 2000, Appl. No. 626,596
Int. Cl. H01R *13/44*
U.S. Cl. 439—138 **1 Claim**



1. A transceiver module comprising:

a base having three in-lined supports extending upright from a front section thereof and two stands extending upright from an intermediate section thereof;

a revertible shielding door comprising a pivot pivotably associated with the three in-line supports, two shielding plates extending from the pivot and rotatable between the three in-line supports, two spring arms extending from two ends of the pivot and each spring arm having a first section parallel to the in-line supports and a second section extending from the first section and horizontally offset from the first section at a terminated end which is firmly fixed to one of the two stands.

wherein the first section of the spring arm is perpendicular to the pivot;

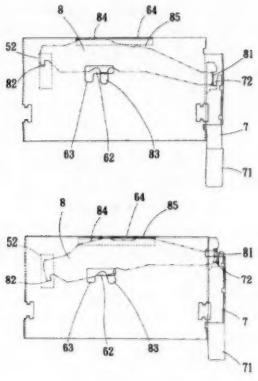
wherein the second section of the spring arm is a curved section;

wherein the terminated end of the second section of the spring arm defines a hole for engagement with the stand of the base;

wherein the stand has a positioning post extending upwardly therefrom for engagement with the hole of the spring arm;

wherein each of the in-line supports defines a groove at the top surface thereof for rotatably receiving pivot.

US 6,340,305 B1
CONNECTOR SOCKET
Wen-Han Liu, Taipei, Taiwan, assignor to Rulong Precision Industry Co., Ltd., Taipei Hsien, Taiwan
Filed Apr. 4, 2001, Appl. No. 824,666
Int. Cl. H01R *13/62*
U.S. Cl. 439—159 **8 Claims**



1. A connector socket, comprising a main body, a cover, a control bar, and a lever member;

said main body being flatly fixed to a circuit board and being provided at a front side with a horizontally extended card slot, and at one end of a top with a guide hole communicable with said card slot;

said cover being removably connected to the top of said main body and being provided at an end opposite to said guide hole of said main body with a guide channel, at a rear side opposite to said card slot of said main body with a downward and then forward bent stopper, and at a predetermined position of a top with an opening;

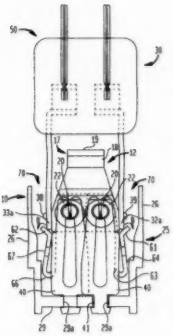
said control bar being movably received in said guide channel of said cover; and

said lever member being flatly and transversely located between said cover and said main body and movably held to said cover by a hooking plate provided at a front edge of said lever member to upward project from and abut on said opening on said cover, said lever member including a first downward bent end close to said guide channel of said cover and engaged with an inner end of said control bar to move along with said control bar, and a second downward bent end close to and extended into said guide hole of said main body, said lever member having a rear edge that is so formed that at least one point thereof is in contact with said stopper of said cover to serve as a supporting point for said lever member to pivotally turn about said supporting point relative to said stopper;

whereby when said control bar is pushed inward relative to said guide channel, said first bent end of said lever member engaged with said control bar is moved rearward for said at least one supporting point on said rear edge of said lever member to contact with said stopper of said cover and cause said lever member to pivotally turn about said at least one supporting point, bringing said second bent end of said lever member to move forward and push a card in said card slot out of said card slot;

said control bar being provided at said inner end with a notch into which said first bent end of said lever member is engaged to prevent said lever member from undesired lateral displacement.

US 6,340,306 B1
BRIDGE CLIP FOR A CONNECTOR
Bassel H. Daoud, Parsippany, N.J., assignor to Avaya Technology Corp., Basking Ridge, N.J.
Filed Dec. 21, 1998, Appl. No. 217,773
Int. Cl. H01R *27/00*
U.S. Cl. 439—219 **7 Claims**



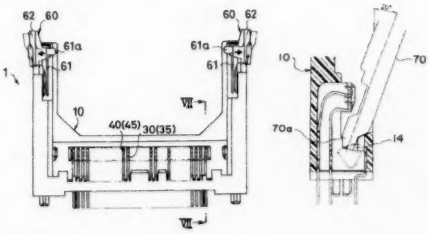
1. A bridge clip and connector system comprising:

a connector having a top portion pivotally mounted to a bottom portion and a housing, the connector having a test channel defined between an inner side of the housing and both the top portion and the bottom portion, the test channel being so shaped and sized as to accommodate therein a first test lead;

said top portion being movable between an open position and a closed position, said top portion having therein at least one wire insertion hole for guidedly receiving a wire, said wire insertion hole having an entrance aperture for entry of said wire, said entrance aperture and said wire insertion hole being distinct from said test channel, said open position facilitating entry of said wire in said wire insertion hole;

a bridge clip having a body and said first test lead connected thereto, and a latch movable between a first position where the bridge clip is secured to the connector, and a second position where the bridge clip is not secured to the connector.

US 6,340,307 B1
ELECTRICAL CONNECTOR
Naoki Sugita, Kanagawa, Japan, assignor to Kel Corporation, Tokyo, Japan
Filed Dec. 6, 1999, Appl. No. 456,086
Claims priority, application Japan, Dec. 11, 1998, 10-352632; Dec. 11, 1998, 10-352633
Int. Cl. H01R *13/62*
U.S. Cl. 439—326 **3 Claims**



1. An electrical connector comprising:

a housing molded in one piece from plastic material and comprising:

a rear wall, which extends substantially vertically, and a front wall, which is provided in front of and parallel with a lower part of said rear wall, and lateral arms connecting the front wall to the rear wall;

a series of plate-like members which extend vertically, forward and rearward, in parallel, spaced apart relation to each other in a laterally extending row and interconnect said front wall and said rear wall so that a groove for receiving the memory module is defined by the front wall, rear wall and upper ends of the plate-like members, slits defined by pairs of adjacent plate-like members;

a raised portion is formed on a front surface of the rear wall at a laterally central location of said rear wall so as to protrude forward and extend laterally and the respective slits extend into the rear wall and into the raised portion to form signal contact grooves;

a plurality of first signal-transmission contacts which are press-fitted in respective signal contact grooves so as to extend parallel with one another in a first laterally extending row in said rear wall, and a plurality of second signal-transmission contacts which are press-fitted in respective signal contact grooves so as to extend in parallel with one another in a second laterally extending row in said rear wall, the first row being forward of the second row, each of said signal-transmission contacts extending up the rear wall and forward through the raised portion and having a contact portion at one end thereof which protrudes forward beyond the raised portion, respective contact portions of the first signal-transmission contacts being aligned below respective contact portions of the second signal-transmission contacts;

wherein a card-like memory module can be located in said housing in an initial, inserted position by inserting the card-like memory module, lower end leading, downward and rearward toward the rear wall until received in the memory module receiving groove with the memory module inclined forward, away from the rear wall at an acute entry angle and the memory module can be subsequently moved to an installed position in the housing by rotating an upper end of the memory card rearward until substantially parallel to the rear wall, said memory module having a plurality of flat signal-transmission contacts arranged in a row on a flat surface thereof, and said signal transmission contacts of said memory module coming into contact with said contact portions of said signal transmission contacts of said connector when said memory module is moved into said installed position, and

said raised portion cooperates with the front wall of said housing to define an entrance for the memory card which limits the magnitude of the acute angle of inclination required for reception of the lower end of the memory module in the memory module receiving groove to a predetermined range,

wherein a guide portion is provided at an upper end of the front wall to lead said lower end of said memory module into said groove when said angle of inclination is greater than said predetermined range,

and wherein at least one mounting groove for retaining a third contact of said connector is provided adjacent the front wall on a side of the groove receiving the memory module which is opposite from the first and second contacts.

US 6,340,308 B1

ELECTRICAL CONNECTOR

Naoki Sugita, Kanagawa, Japan, assignor to Kel Corporation, Tokyo, Japan

Filed Dec. 6, 1999, Appl. No. 456,087

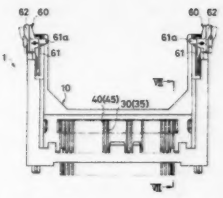
Claims priority, application Japan, Dec. 11, 1998, 10-352634

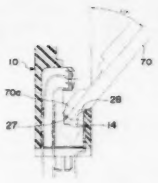
Int. Cl. H01R *13/62*

U.S. Cl. 439—326 **7 Claims**

1. An electrical connector comprising:

a housing molded In one piece from plastic material and comprising:





a rear wall, which extends substantially vertically, and a front wall, which is provided in front of and parallel with a lower part of said rear wall, and lateral arms connecting the front wall to the rear wall;

a series of plate-like members which extend vertically, forward and rearward, in parallel, spaced apart relation to each other in a laterally extending row and interconnect said front wall and said rear wall so that a groove for receiving the memory module is defined by the front wall, rear wall and upper ends of the plate-like members slits defined by pairs of adjacent plate-like members;

a raised portion is formed on a front surface of the rear wall at a laterally central location of said rear wall so as to protrude forward and extend laterally and the respective slits extend into the rear wall and into the raised portion to form signal contact grooves;

a plurality of first signal-transmission contacts having respective anchoring portions which are which are press-fitted in respective signal contact grooves so that the first signal-transmission contacts extend in a first laterally extending row in said rear wall, and a plurality of second signal-transmission contacts having respective anchoring portions which are press-fitted in respective signal contact grooves so that the second signal-transmission contacts extend in a second laterally extending row in said rear wall, each of said signal-transmission contacts having a first arm portion and a second arm portion, each first arm portion extending upwardly from a respective anchoring portion and each second arm portion extending transversely from a respective first arm portion and through the raised portion and having a contact portion at one end thereof which protrudes forward beyond the raised portion, respective contact portions of the first signal-transmission contacts being aligned below respective contact portions of the second signal-transmission contacts;

the first laterally extending row of first signal-transmission contacts being forward of the second laterally extending row of signal-transmission contacts with respective individual first signal-transmission contacts being aligned forward of and anchored in same respective individual signal contact grooves as respective individual second signal-transmission contacts so that two signal transmission contacts are anchored in the same of each signal contact groove,

whereby a card-like memory module can be located in said housing in an initial, inserted position by inserting the card-like memory module, lower end leading, downward and rearward toward the rear wall until received in the memory module receiving groove with the memory module inclined forward, away from the rear wall at an acute entry angle and the memory module can be subsequently moved to an installed position in the housing by rotating an upper end of the memory card rearward until substantially parallel to the rear wall, said memory module having a plurality of flat signal-transmission contacts arranged in two rows on a flat surface thereof, and said signal transmission contacts of said memory module coming into contact with said contact portions of both said first signal-transmission contacts and said second signal-transmission contacts of said connector when said memory module is moved into said installed position,

and wherein at least one mounting groove for retaining a third contact of said connector is provided adjacent the front wall

on a side of the groove receiving the memory module which is opposite from the first and second contacts.

US 6,340,309 B1

ZERO INSERTION FORCE SOCKET WITH AN IMPROVED COVER

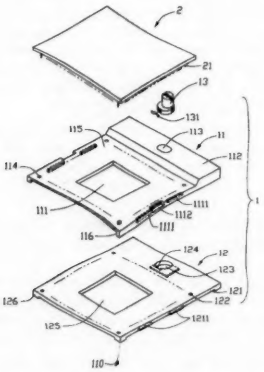
Nick Lin, Hsin-Chuang, and Bono Liao, Tu-Chen, both of Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Mar. 1, 2001, Appl. No. 797,629

Claims priority, application Taiwan, Dec. 12, 2000, 89221523

Int. Cl. H01R *4/50*

U.S. Cl. 439—342 **9 Claims**



1. A socket having a Central Processing Unit (CPU) mounted *thereon, comprising:*

a dielectric base defining a plurality of cavities receiving a plurality of contacts therein; and

a cover mounted on the dielectric base defining a plurality of holes in alignment with the cavities; wherein the CPU is mounted on the cove, the CPU having a plurality of pins extending through the holes into the cavities, said cover *defining two slots in two lateral side edge portions thereof* located below two side edges of the CPU, respectively, whereby a user's fingers can more easily grip the CPU to pull the CPU away from the socket in order to replace the CPU with another one wherein each of said slots does not extend *through said corresponding* lateral side edge portion.

US 6,340,310 B2

LAMP HOLDER

Dieter Henrici, Arnsberg, and Manuel Rodrigues, Wickede/ Ruhr, both of Germany, assignors to BJB GmbH & Co. KG, Arnsberg, Germany

Filed Dec. 6, 2000, Appl. No. 731,252

Claims priority, application Germany, Dec. 7, 1999, 199 58 841

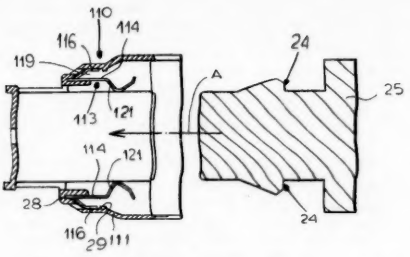
Int. Cl. H01R *13/625;4/50;13/627*

U.S. Cl. 439—346 ***13 Claims***

1. A lamp holder for a base of a lamp, said lamp holder comprising:

a housing composed of electrically insulating material formed with a cavity opening along a side of said housing; and

at least one electrically conductive contact spring received in said housing for engagement with the base of the lamp for mechanical retention of the base and electrical connection therewith, said contact spring being formed from a planar metal strip with a shank having a free end lodged in said housing, a bend at an opposite of the shank and forming a shoulder engageable with and biased against said base for retaining said base in said housing against tension tending to *withdraw said base from said housing, and a barb formed* from said shank between said free end and said shoulder and bent from said shank out of an opening in said strip, away from a direction in which said shoulder is bent from said shank for bracing against said housing, said barb being formed with a detent lug spaced from said shank and engaging behind a projection on said housing for retaining said contact spring in said housing, said shank being of uniform width and continuous across said width from said opening to said opposite end of said shank, said shank defining a free space with said base and said housing having a wall portion spaced outwardly from said shank and said barb being bent and having a barb portion between said lug and a junction of the barb, with the shank lying along said wall portion and biasing said spring toward said base.



US 6,340,311 B1

STRUCTURE FOR CONNECTING A PLURALITY OF BATTERY MODULES TO CONSTITUTE A BATTERY PACK

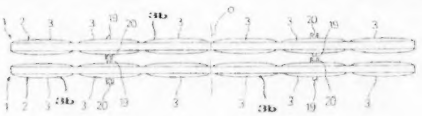
Shinji Hamada, Toyohashi; Noriyuki Fujioka, Kosai; Shuhei Marukawa, Toyohashi, and Toyohiko Eto, Toyota, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, and Toyota Jidosha Kabushiki Kaisha, Aichi, both of Japan

Filed Oct. 6, 2000, Appl. No. 680,294

Claims priority, application Japan, Oct. 8, 1999, 11-288797

Int. Cl. H01R *4/24;4/26;11/20;4/44;11/01*

U.S. Cl. 439—429 **10 Claims**



1. A battery module comprising:

a plurality of prismatic cell cases defined by opposed short lateral walls and opposed long lateral walls, and coupled together such that a cell case of said plurality of cell cases *shares a common wall with another adjacent cell case of said* plurality of cell cases, said plurality of cell cases forming an integral battery case having opposed ends, each cell case of said plurality of cell cases configured to accommodate ele*ments for electromotive force therein;*

a positive electrode terminal arranged at one end of said opposed ends of said integral battery case, and a negative electrode terminal arranged at the other end of said opposed ends of said integral battery case;

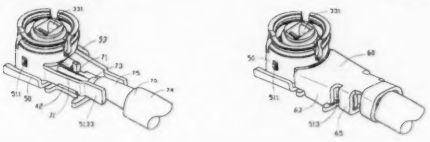
a locating projection located at substantially the center of one long lateral wall of said opposed lateral walls of a said cell case; and

an indentation located at substantially the center of the other long lateral wall of said opposed lateral walls of a said cell case.

US 6,340,312 B1
CABLE END CONNECTOR HAVING A COMPLETE EMI SHIELDING

David Tso-Chin Ko, Thousand Oaks, Calif., assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Feb. 28, 2001, Appl. No. 797,139
Int. Cl. H01R *17/18*
U.S. Cl. 439—582 **3 Claims**



1. A cable end connector comprising:

a housing including a base portion having a pair of wings on sides thereof and a tubular portion engaged with said base portion;

a terminal received in said housing, the terminal having a tail portion supported on said base portion;

a metal shell including a planar portion attached to a bottom face of said base portion, and a trunk portion connected to said planar portion and enclosing said tubular portion of said housing, said trunk portion including a pair of arms extending along said wings of said base portion said base portion of said housing, each arm having a sealing tab extending from an end thereof; and

a retainer covering said planar portion and said arms for retaining said arms to said planar portion but not contacting said tail portion of said terminal, said sealing tabs being adapted for accommodating a braiding layer of the cable, said retainer enclosing said sealing tab therein; wherein

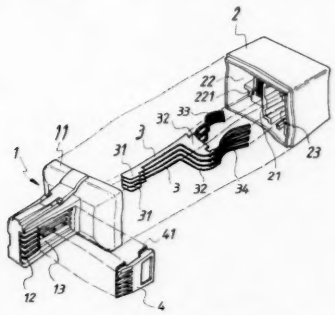
the retainer includes a braiding crimp for grounding a braiding layer of a coaxial cable, and a pair of locking tabs respectively depends downwardly from opposite sides of the retainer for retaining the arms to the planar portion; wherein

each of said arms defines a recess in an underside thereof to receive the corresponding wing so as to restrict movement of the arm relative to the base portion.

US 6,340,313 B1
TELEPHONE TRANSFER DOUBLE-SOCKET

Lih-Jiuan Hwang, P.O. Box No.6-57, Chung-Ho City, Taipei Hsien 235, Taiwan

Filed Apr. 28, 2000, Appl. No. 560,186
Int. Cl. H01R *25/00*
U.S. Cl. 439—638 **1 Claim**



1. A telephone transfer double socket comprising:

a) a socket body bounding an interior space and having a wall defining two insertion holes in communication with the interior space, the two insertion holes having different configurations from each other for accepting two different types of telephone plugs, the socket body having a partition extending from the wall into the interior space between the two insertion holes;

b) a male plug having a terminal seat attached to the socket body, the male plug configured to be inserted into a female telephone plug having the same configuration as one of the two insertion holes, the male plug having a distal end with a plurality of separated guiding grooves, and a section with a recess;

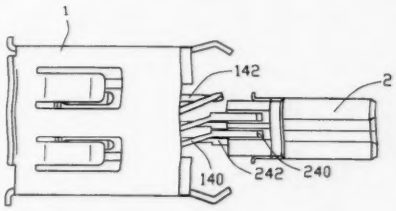
c) a plurality of spaced apart connecting terminals having connecting feet extending into the two insertion holes, elongated, planar bodies having planar connecting portions from which the connecting feet extend, the planar connecting portions contacting the terminal seat, and terminal heads formed on the elongated bodies, the terminal heads being located in the guiding grooves in the male plug; and,

d) a stopper plate mounted in the recess on the male plug, the stopper plate having a resistance piece in contact with the terminal heads of the connecting terminals so as to retain the connecting terminals in desired positions.

US 6,340,314 B1
ELECTRICAL ADAPTER

Yu-Jen Kuo, Tu-Chen, Taiwan, assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed May 8, 2001, Appl. No. 852,099
Claims priority, application Taiwan, Dec. 21, 2000, 089222265 U
Int. Cl. H01R *25/00*
U.S. Cl. 439—638 **10 Claims**



1. An electrical adapter comprising:

a first connector having a first shell member a housing enclosed by the first shell member, and a plurality of terminals received in the housing, each terminal having a contacting portion at one end thereof for mating with a corresponding contact of a complementary connector and a soldering portion at an opposite end thereof; and

a second connector having a second shell member, a housing enclosed by the second shell member, and a plurality of pins received in the housing, each pin having a contacting portion at one end thereof for mating with a corresponding contact of a mating connector and a soldering portion at an opposite end thereof;

wherein the soldering portions of the second connector are respectively aligned with and soldered to individual ones of a selected number of soldering portions of the first connector for making respective electrical connections therebetween;

wherein the soldering portions of the first and the second connectors are respectively arranged in two staggered rows;

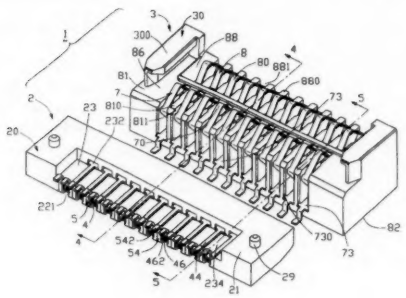
wherein one row of the soldering portions of the first connector are curved to be soldered directly with corresponding soldering portions of the second connector for making a respective electrical connection therebetween.

US 6,340,315 B1

BATTERY CONNECTOR ASSEMBLY WITH IMPROVED CONTACTS ARRANGEMENT

Jen Jou Chang, Yung-Ho, Taiwan, assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Aug. 15, 2000, Appl. No. 639,391
Claims priority, application Taiwan, Jun. 3, 2000, 089209518
Int. Cl. H01R *24/00*
U.S. Cl. 439—660 **1 Claim**



1. A battery connector assembly, comprising:

a plug connector comprising:

an insulative housing having a first side having a generally stepped shape and a second side opposite to the first side, said first side defining a first row of slots and a second row of slots, and

a set of conductive first plug contacts and a set of conductive second plug contacts being received in the first and second rows of slots, respectively, each of the first and the second contacts to comprising a contact portion, the contact portions of the set of first and the set of second contacts being spaced a different distance from the second side of the housing; and

a receptacle connector mateable with the plug connector, said receptacle connector comprising:

an insulative housing having a first side having a generally stepped shape and a second side opposite to the first side, said first side defining a first row of slots and a second row of slots, and

a set of conductive first receptacle contacts and a set of conductive second receptacle contacts being respectively received in the first row of slots and in the second row of slots of the receptacle connector, respectively, and being engageable with the set of conductive second plug contacts and the set of conductive first plug contacts of the plug connector, respectively:

wherein the first side of the housing of the plug connector forms a lower step and an upper step, and the first row of slots and the second row of slots are respectively defined in the lower step and in the upper step;

wherein the lower and upper steps of the plug connector comprise a row of lower partitions and a row of upper partitions, respectively, for separating the slots in the first row of slots and the slots in the second row of slots from each other;

wherein the slots in the first row of slots in the lower step are offset from the slots in the second row of slots in the upper step by a distance of a half pitch, where a pitch is the distance between two adjacent first plug contacts;

wherein the first side of the plug connector defines two elongate indents at opposite ends thereof, and wherein the first side of the receptacle connector forms two latching members at opposite ends thereof for engaging within the indents of the plug connector;

wherein the housing of the plug connector forms a guiding rib projecting into each indent thereof and the guiding rib forms a slanted tip surface at an end thereof for guiding the latching members of the receptacle connector to mate with the indents of the plug connector;

wherein the second side of the housing of the plug connector defines a recess along one side thereof;

wherein a plurality of openings are defined in a peripheral wall defining one side of the recess and the set of first contacts of the plug connector extend through corresponding openings and abut against a lower surface of the recess;

wherein the first and second plug contacts of the plug connector form horizontal solder tags coplanar with the second side of the housing of the plug connector for soldering to a printed circuit board using surface mount technology;

wherein the first side of the housing of the receptacle connector forms a lower step and an upper step both extending along elongate sides thereof;

wherein the lower and upper steps of the receptacle connector comprise a row of lower partitions and a row of upper partitions, respectively, for respectively separating the first row of slots from each other and the second row of slots from each other;

wherein the slots in the first row of slots of the receptacle connector are offset from the slots in the second row of slots thereof by a distance of half a pitch, where a pitch is the distance between two adjacent first receptacle contacts;

wherein a notch is defined in a lower end of each slot of the receptacle connector for retaining a first receptacle contact or a second receptacle contact;

wherein each first receptacle contact and each second receptacle contact have a similar structure and each comprises a resilient portion, a contact portion extending from one end of the resilient portion and a retaining portion extending from the other end of the resilient portion;

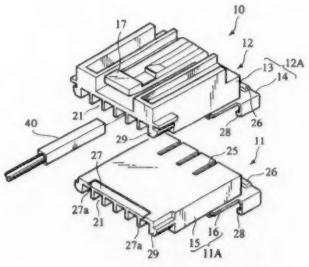
wherein the contact portion of each first contact forms an apex at an uppermost point of the first contact, which extends a shorter distance from the second side of the receptacle connector than does an apex formed by the contact portion at an uppermost point of each second contact.

US 6,340,316 B2

CONNECTOR AND SET OF CONNECTORS

Kentaro Nagai, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 4, 2000, Appl. No. 575,722
Claims priority, application Japan, Aug. 6, 1999, P11-224181
Int. Cl. H01R *13/502;13/514*
U.S. Cl. 439—701 **19 Claims**



1. A plurality of insulation-displacement connectors, each of the plurality of insulation-displacement connectors comprising:

a connector housing having an opening for pressure contacting an insulated wire to an insulation displacement terminal in a terminal accommodating chamber,

each connector housing comprising:

a housing body having an upper wall and a lower wall one of which defines the opening;

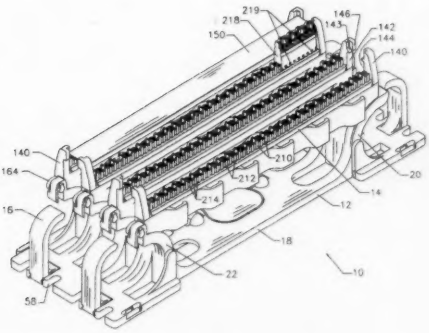
a cover for closing the opening, the cover being connected integrally to the housing body through a hinge; and

a first engagement part fixed to an outer surface of the cover at a position opposite to the hinge,

at least one of the plurality of insulation-displacement connectors comprising a first mating engagement part formed on a surface facing another of the plurality of insulation-displacement connectors,

wherein, when at least one of the covers of the connector housings is closed, the engagement part of that cover of that connector housing of that insulation-displacement connector is fitted in the mating engagement part formed on the at least one of the plurality of insulation-displacement connectors to join at least two of the plurality of insulation-displacement connectors together.

US 6,340,317 B1
HINGED WIRING BLOCK
Mike H. Lin, Cerritos, Calif., assignor to International Connectors & Cable Corporation, Cerritos, Calif.
Filed Nov. 20, 1998, Appl. No. 197,016
Int. Cl. H01R *9/22;13/46;* **H02G** *3/18*
U.S. Cl. 439—713 **20 Claims**



20. A wiring assembly comprising:

a vertical support surface; and

a wiring block mounted to the vertical support surface, the wiring block comprising:

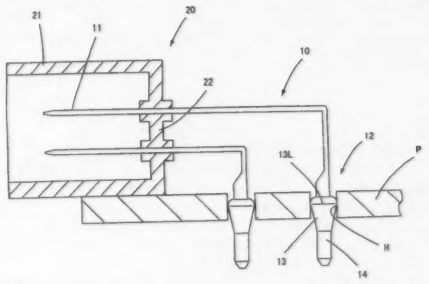
a base having a first support member and a second support member, the first and second support members being spaced apart to form a vertical cabling channel therebetween for receiving communication wires; and

a termination strip having a row of spaced-apart teeth defining a plurality of slots, each of the plurality of slots for receiving a respective one of the communication wires, the row extending from a location adjacent a first end portion of the termination strip to a location adjacent a second end portion of the termination strip;

wherein the first end portion of the termination strip is removably attachable to the first support member and the second end portion of the termination strip is hingedly connected to the second support member such that the termination strip is movable between a closed position wherein the first end portion of the termination strip is attached to the first support member closing off the cabling channel and an open position wherein the first end portion of the termination strip is detached and pivoted away from the first support member to form an opening therebetween to permit insertion and removal of communication wires through the opening between the first end portion of the termination strip and the first support member into and out of the cabling channel;

wherein the second end portion of the termination strip is hingedly connected to the second support member about a hinge axis that extends in the vertical direction.

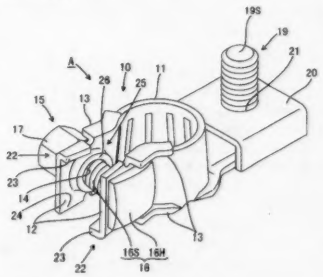
US 6,340,318 B1
METAL TERMINAL
David C Wright, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan
Filed Jul. 13, 2000, Appl. No. 616,370
Claims priority, application Japan, Jul. 13, 1999, 11-199209
Int. Cl. H01R *13/42*
U.S. Cl. 439—751 **6 Claims**



1. A metal terminal for insertion into a circular contact hole of an electrical circuit substrate and making electrical contact with an inner surface of the contact hole, comprising:

an insertion portion having a resiliently deformable outer wall which defines a central cavity and a slit which extends along said outer wall in an insertion direction of the terminal and allows the terminal to contract in a direction transverse to the insertion direction, at least a portion of said insertion portion being a tapered part that narrows smoothly in the insertion direction, wherein an outer peripheral surface of said tapered part at a widest portion is outwardly convex along an axis parallel to said insertion direction and sized to bear resiliently on an inner surface of the circular contact hole along a circumferential linear contact region.

US 6,340,319 B1
BATTERY TERMINAL
Hideki Matsunaga, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan
Filed Jan. 12, 2001, Appl. No. 759,405
Claims priority, application Japan, Dec. 1, 2000, 12-003511
Int. Cl. H01R *4/50*
U.S. Cl. 439—761 **10 Claims**



1. A battery terminal (A-C), comprising:

an arcuate fastening portion (**11**; **31**) to be fitted on a battery post (P),

first and second extending portions (**12**; **32**) extending from the arcuate fastening portion (**11**; **31**), and

a fastening means (**15**) for deforming the fastening portion (**11**; **31**) to reduce its diameter by bringing the extending portions (**12**; **32**) closer to each other,

wherein at least one of the extending portions (**12**; **32**) comprises:

a primary stopper (**22**; **34**) for restricting movement of the extending portions (**12**; **32**) toward each other by being brought into a contact state when a space between the extending portions (**12**; **32**) is narrowed to a specified degree, and

a secondary stopper (**25**; **39**) for restricting movement of the extending portions (**12**; **32**) toward each other by being brought into a contact state when the space between the extending portions (**12**; **32**) is less than the state where the primary stopper (**22**; **34**) is substantially in the contact state while being accompanied by deformation of at least one of the primary stopper (**22**; **34**) and the extending portions (**12**; **32**).

US 6,340,320 B1

PROBE PIN ASSEMBLY, A METHOD OF MAKING THE SAME AND A CONNECTOR USING THE SAME

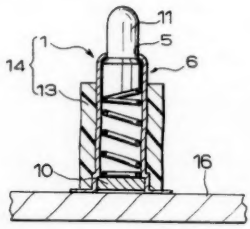
Shingo Ogawa, Tokyo, Japan, assignor to Honda Tsushin Kogyo Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1999, Appl. No. 266,612

Claims priority, application Japan, Dec. 18, 1998, 10-360557

Int. Cl. H01R *13/24*

U.S. Cl. 439—824 **2 Claims**



1. A probe pin assembly comprising:

one or more sleeves which are formed by stamping and deep-drawing a thin sheet of metal with dies;

contact pins slidably fitted in the sleeves;

resilient members contained in the sleeves to spring-bias the contact pins with their tip ends appearing from the sleeves; and

cover plates for closing rear openings of the sleeves, thereby preventing the resilient members from springing out from the sleeves wherein said sleeves are plated only on lower halves of said sleeves.

US 6,340,321 B2

ELECTRICAL CONNECTOR

Masahiro Sawayanagi, Shizuoka-ken, Japan, assignor to *Yazaki Corporation, Tokyo, Japan*

Filed Mar. 7, 2001, Appl. No. 799,586

Claims priority, application Japan, Mar. 9, 2000, 12-064555

Int. Cl. H01R *4/10*

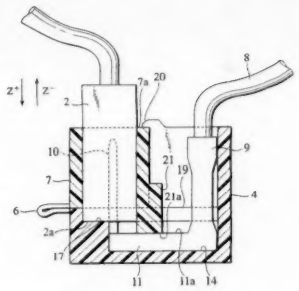
U.S. Cl. 439—877 **11 Claims**

1. A connector comprising:

a connector terminal constituted of a wire connecting portion to which a wire is connected, a terminal contact portion for contacting a mating terminal of a mating connector, and a joint portion joining said wire connecting portion to said terminal contact portion;

a first housing having a terminal accommodating chamber and a terminal insertion hole, said connector terminal being disposed in said terminal accommodating chamber, said joint portion being embedded in said terminal insertion hole;

a second housing having a connector insertion hole which the mating connector is to be inserted in and engaged with, said second housing being mounted integrally with said terminal accommodating chamber of said first housing; and



a terminal pressing member provided on said second housing, said terminal pressing member pressing said joint portion when the second housing is coupled with said first housing.

US 6,340,322 B1

STRUCTURE OF MOUNTING OF EXHAUST GAS SAMPLING PIPE IN OUTBOARD ENGINE SYSTEM

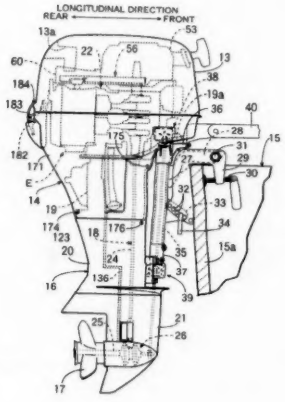
Hiroyuki Yoshida; Hiroki Tawa; Tomonori Ikuma, and Hideaki Takada, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 2001, Appl. No. 754,078

Claims priority, application Japan, Jan. 17, 2000, 2000-010386

Int. Cl. B63H *21/32*

U.S. Cl. 440—89 **1 Claim**

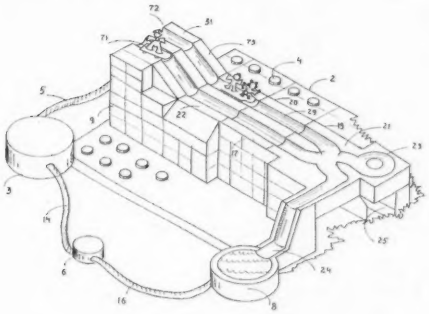


1. A structure of mounting of an exhaust gas sampling pipe in an outboard engine system in which a passage defining member having a passage wall defining an exhaust gas passage for guiding an exhaust gas from an engine is provided at an outer wall thereof with a recess and a seal surface surrounding said recess; a fluid passage isolated from the exhaust gas passage is defined between said recess and a lid member which is mounted to the outer wall of said passage defining member with a seal member interposed between the lid member and said seal surface; and an exhaust gas sampling pipe is inserted into said exhaust gas passage through an insertion bore which is provided in said passage defining member to open into said seal surface, wherein said seal member is formed to surround an opening at an outer end of said insertion bore, and said exhaust gas sampling pipe is passed through and gas-tightly fixed in said lid member.

US 6,340,323 B1
WATERSLIDE TOY BLOCK CONSTRUCTION SYSTEM

Kenneth P. Glynn, Raritan Township Hunterdon Valley County, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.

Filed Aug. 24, 2000, Appl. No. 645,137
Int. Cl. A63H *33/08*
U.S. Cl. 446—89 **18 Claims**



1. A waterslide toy block construction system, which comprises:

(a) a plurality of standard toy construction blocks, said construction blocks manufactured for erection and disassembly by a user; each of said standard toy construction blocks having a top, four sidewalls and an open bottom, said open bottom exposing an undersurface of said top; each of said standard toy construction blocks having a plurality of elongated projections extending from said top surface; each of said standard toy construction blocks also having at least one elongated friction post thereon, said friction post being hollow and extending from said underside of said top;

(b) a plurality of ramp blocks, each of said ramp blocks having a top that slopes considerably from the horizontal, at least three sidewalls and an open bottom, said open bottom exposing an undersurface of said top; each of said ramp blocks also having at least one elongated friction post thereon, said friction post being hollow and extending form said underside of said top;

(c) a plurality of grooved toy construction blocks, said construction blocks manufactured for erection and disassembly by a user to create extended and generally horizontal or vertical paths for flowing water; each of said grooved toy construction blocks having a top, four sidewalls and an open bottom, said open bottom exposing an undersurface of said top; each of said grooved toy construction blocks having at least one elongated friction post thereon, said friction post being hollow and extending from said underside of said top; each of said grooved toy construction blocks having at least one groove defined on said top and within said sides; each of said grooved toy construction blocks having attachment means for securement with adjacent grooved toy construction blocks;

(d) attachment means for securement of said grooved toy construction blocks wherein said attachment means comprise a first fastening element defined by a side surface of a first grooved toy construction block and a collaborating second fastening element defined by an adjacent side surface of an adjacent grooved toy construction block, said first and second fastening elements adapted to interconnect said construction blocks so as to sustain a flow of water thereon, and resist separation of said grooved toy construction blocks;

(e) at least one construction block unit with water inlet having attachment to a water source;

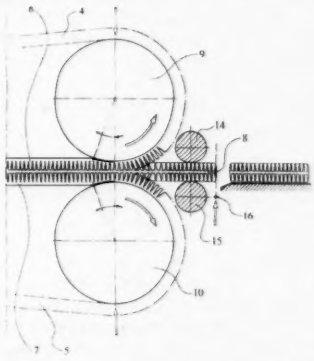
(f) means to reduce water pressure and prevent detachment of said water source due to hydrodynamic motion therethrough; and

(g) a plurality of toy miniatures each having an undersurface that defines a plurality of apertures, said apertures sized, shaped and spaced so as to receive elongated projections of a standard toy construction block.

US 6,340,324 B1
METHOD AND CORRESPONDING APPARATUS FOR THE PRODUCTION OF HONEYCOMBS FOR BEEKEEPING

Carlos Ferrer Vidal, Barcelona, Spain, assignor to Breat, S.L., Sant Adria de Besos, Spain

Filed Jul. 18, 2000, Appl. No. 618,833
Claims priority, application Spain, Jul. 27, 1999, 9901689
Int. Cl. A01K *47/04*
U.S. Cl. 449—2 **6 Claims**

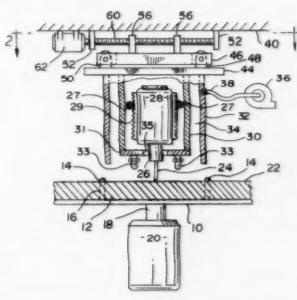


1. A method for the production of honeycombs for beekeeping which comprises molding a mass of hot wax by the action of cores of an endless belt, the cores being of a shape complementary to that of the cells, characterized in that both faces of the honeycomb are moulded simultaneously by the action of respective belts carrying cores having resilience properties, and after the honeycomb has cooled, compressing it on both faces to allow the cores to be separated from the walls of the cells, taking advantage of the resilience of the cores and their ability to regain their shape and of the plasticity of the cells and the permanent deformation brought about therein.

US 6,340,325 B1
POLISHING PAD GROOVING METHOD AND APPARATUS

Shyng-Tsong Chen, Patterson, N.J.; Alex Siu Keung Chung, Marlborough, Mass.; Kenneth M. Davis, Newburgh, N.Y.; Oscar Kai Chi Hsu, Chelmsford, Mass., and Kenneth P. Rodbell, Sandy Hook, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 2000, Appl. No. 605,869
Int. Cl. B24B *1/00*
U.S. Cl. 451—56 **19 Claims**



1. A method for forming a groove in a pad comprising steps of:

placing said pad on a supporting surface with a working surface

of the pad in spaced relation opposite to a router bit and to at least one stop member adjacent to said router bit, an outer end portion of said bit projecting towards said pad beyond said stop member,

applying a pressure differential to said pad to cause the working surface thereof to move toward said stop member;

providing axial movement between said router bit and said pad and rotating said router bit to cause said outer end portion to form an initial recess by cutting into said pad to a depth below its working surface, said recess depth being limited by said pressure differential causing the working surface of said pad to move into contact with said stop member; and

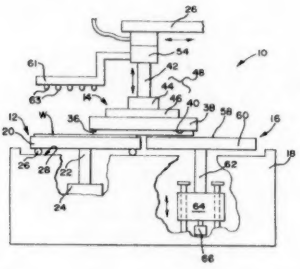
providing lateral movement between said rotating router bit and said pad while the working surface of said pad is maintained in contact with said stop member by said pressure differential to cause said rotating bit to cut a groove that extends laterally away from said initial recess and has a depth substantially the same as said recess depth.

US 6,340,326 B1

SYSTEM AND METHOD FOR CONTROLLED POLISHING AND PLANARIZATION OF SEMICONDUCTOR WAFERS

Rod Kistler, Los Gatos, and Yehiel Gotkis, Fremont, both of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed Jan. 28, 2000, Appl. No. 493,978
Int. Cl. B23B *29/00*
U.S. Cl. 451—286 **13 Claims**



1. A semiconductor wafer polisher comprising:

a rotatable wafer carrier having a wafer receiving surface for releasably retaining a semiconductor wafer;

a rotatable polishing pad carrier having a polishing pad oriented substantially parallel to the wafer receiving surface and configured to movably position the polishing pad at a plurality of plurality overlapping positions with respect to the semiconductor wafer, wherein the polishing pad contacts and rotates against a portion of a surface of the semiconductor wafer;

a rotatable pad dressing assembly having a surface comprising a polishing pad conditioning material, the surface of the pad dressing assembly positioned substantially coplanar with the surface of the semiconductor wafer on the wafer carrier, wherein the rotatable pad dressing assembly rotates and contacts a first portion of the polishing pad, while a second portion of the pad polishes the semiconductor wafer; and

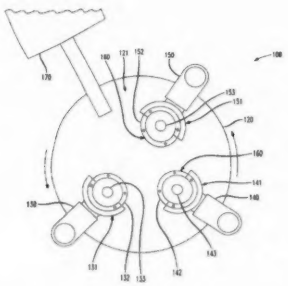
wherein the rotatable wafer carrier comprises a support positioned to maintain the semiconductor wafer in fixed planar position, the support comprising a circular bearing, wherein the rotatable wafer carrier does not flex in response to receiving a polishing pressure from the pad carrier assembly.

US 6,340,327 B1

WAFER POLISHING APPARATUS AND PROCESS

Samir A. Afif, Alburtis, Pa., assignor to Agere Systems Guardian Corp., Orlando, Fla.

Filed Oct. 15, 1999, Appl. No. 419,259
Int. Cl. B24B *21/18;33/00*
U.S. Cl. 451—444 **6 Claims**



1. An apparatus for polishing a workpiece comprising:

a polishing pad;

at least two polishing arms, each for holding a workpiece to be polished on the polishing pad;

at least one conditioning arm for conditioning the polishing pad; and,

a slurry dispenser, said slurry dispenser being disposed between the at least two polishing arms and the at least one conditioning arm so that slurry dispensed by the slurry dispenser reaches the at least one conditioning arm before it reaches the at least two polishing arms, wherein the at least two polishing arms and the at least one conditioning arm each include at least one vacuum chuck coupled thereto,

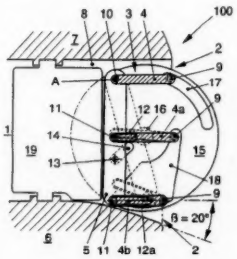
wherein the at least one vacuum chuck of the at least one conditioning arm assists in spreading out the slurry dispensed by the slurry dispenser.

US 6,340,328 B1

AIR CURRENT REGULATING NOZZLE ARRANGEMENT FOR VENTILATING THE INTERIOR OF AN AUTOMOBILE

Andreas Schwandt, Burgdorf; Silke Hasenauer, Wasbüttel, and Bertram Seydell, Braunschweig, all of Germany, assignors to Volkswagen AG, Germany

Continuation of application No. PCT/EP98/00364, filed on Jun. 17, 1998. This application Dec. 20, 1999, Appl. No. 467,263.
Claims priority, application Germany, Jun. 18, 1997, 197 25 682
Int. Cl. B60H *1/34*
U.S. Cl. 454—155 **23 Claims**



15. An air current regulating nozzle arrangement comprising an air duct having a base wall, a top wall and the opposite side walls leading to an air discharge opening and an array of spaced slats

mounted in the air duct adjacent to the air discharge opening, wherein the base wall of the air duct in the region of the array of slats has a portion which is inclined at an acute angle away from a longitudinal axis of the air duct to provide a funnel-shaped widening of the air duct in the direction toward the air discharge opening, wherein at least two slats in the array are supported adjacent to their outer edges by first supports located at fixed positions with respect to the air flow passage and are supported at locations spaced inwardly from their outer edges by second supports which are movable to cause the slats to pivot between parallel orientations in which one of the slats engages the inclined base wall to reduce the cross section of the air flow passage at the air discharge opening and provide an intensive parallel air flow and orientations in which they diverge outwardly with respect to air discharge opening to provide a diffuse air flow.

US 6,340,329 B1

ROOM GRATING

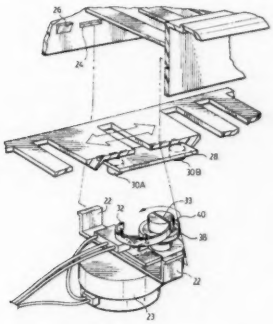
Chan-Woo Park, 297 Worth Blvd., Thornhill, Ontario, Canada, L4J 7V9

Filed Sep. 12, 2000, Appl. No. 660,353

Claims priority, application Canada, Jan. 13, 2000, 2295891

Int. Cl. F24F *13/12*

U.S. Cl. 454—258 **4 Claims**



1. Room air grating comprising:

first stationary grid,

a second grid movable between OPEN and CLOSED positions,

a motor operable to move said second grid between said positions,

a resilient yieldable connection between said motor and said grid, whereby resistance to screen grid movement causes yielding of said connection.

US 6,340,330 B1

GAME MACHINE AND INFORMATION STORAGE MEDIUM

Masuya Oishi, Yokohama; Teruaki Konishi; Hiroaki Yotoriyama, both of Kawasaki, and Tadashi Iguchi, Yokohama, all of Japan, assignors to Namco Ltd., Tokyo, Japan

PCT No. PCT/JP97/03602, § 371 Date Sep. 21, 1998, § 102(e) Date Sep. 21, 1998, PCT Pub. No. WO98/15328, PCT Pub. Date Apr. 16, 1998

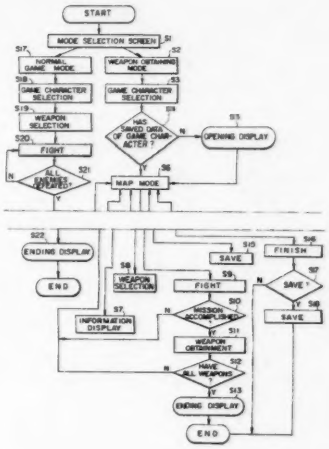
PCT Filed Oct. 8, 1997, Appl. No. 77,926

Claims priority, application Japan, Oct. 9, 1996, 8-287534

Int. Cl. A63F *13/00*

U.S. Cl. 463—8 **28 Claims**

1. A game device, comprising:



means for selecting one of a plurality of modes including a first mode in which a player controls a game character through a given control means to make the game character fight against an enemy game character, and a second mode in which a game for obtaining an item to be used by the game character is played;

means for enabling the game character in said first mode to use the item obtained in said second mode, and for changing at least one of an action of the game character caused by an input by the player and information relating to a fight when the item used by the game character is changed; and

means for synthesizing a game image including an image of the game character,

wherein a mode selection screen is displayed before the start of the game play, said mode selection screen being a screen in which the player selects a mode to be played from a plurality of modes including said first mode and said second mode.

US 6,340,331 B1

CASHLESS PERIPHERAL DEVICE FOR A GAMING SYSTEM

Michael Saunders, Henderson, Nev., and Dennis Willard Sorenson, Alta Loma, Calif., assignors to Coinless Systems, Inc., Las Vegas, Nev.

Continuation of application No. 08/881,788, filed on Jun. 24, 1997, now Pat. No. 6,012,832. This application Jun. 11, 1998, Appl. No. 96,095.

This patent is subject to a terminal disclaimer.

Int. Cl. A63F *9/24*

U.S. Cl. 463—25 **19 Claims**

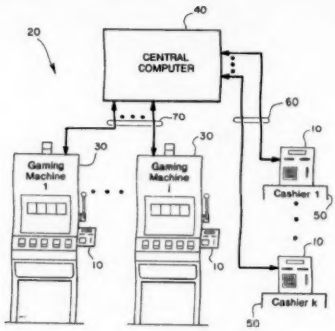
1. A cashless peripheral device for use in a gaming machine which is connected to a central computer, the gaming machine issuing a cash-out signal to the central computer when a player wishes to cash out any gaming credits the player has accrued, the cashless peripheral device comprising:

a) at least one unprinted ticket;

b) means for printing on an unprinted ticket a coded value based on the cash-out signal from the central computer;

c) means for transporting the printed ticket to a verification location;

d) at the verification location, means for verifying the coded value on the printed ticket; and



e) means for dispensing the printed ticket from the gaming machine if the coded value on the printed ticket is verified as correct.

US 6,340,332 B1
COMPUTER READABLE PROGRAM PRODUCT STORING PROGRAM FOR BALL-PLAYING TYPE GAME, SAID PROGRAM, AND BALL-PLAYING TYPE GAME APPARATUS AND METHOD
Shiyu Rimoto, Tokyo, and Tomoaki Yoshinobu, Hyogo, both of Japan, assignors to Square Co., Ltd., Tokyo, Japan
Filed Jul. 28, 2000, Appl. No. 628,286
Claims priority, application Japan, May 19, 2000, 12-148312
Int. Cl. A63F *9/24*
U.S. Cl. 463—31 **24 Claims**

1. A computer readable program product storing a program for a ball-playing type game which realizes a ball-playing game indirectly controlling movement of a ball in accordance with movement of a player,

said program product storing a program for making a computer:

judge positions of movement of a first player and a ball on a time axis,

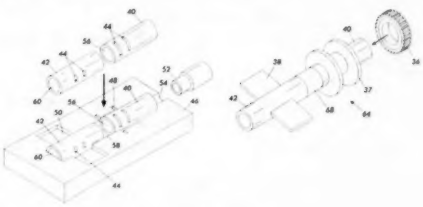
judge a group of motions for making said ball move from said first player to a second player from a plurality of groups of motions assigned to said first player in accordance with a future positional relationship between said first player and said ball judged on said time axis, a plurality of groups of motions for making the ball move between players being assigned to each player,

display movement of said first player using said judged group of motions,

judge the group of motions for making said ball move from said first player to said second player from said plurality of groups of motions assigned to said second player in accordance with a future positional relationship between said first player and said ball judged on said time axis, and

display movement of said second player using said group of motions judged for said second player along with displaying said movement of said first player.

US 6,340,333 B1
FLEXIBLE MOLDED CORE SHAFT
Robert D. Russell, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 25, 1999, Appl. No. 427,011
Int. Cl. F16D *3/52*
U.S. Cl. 464—87 **18 Claims**



1. A flexible shaft assembly, comprising:

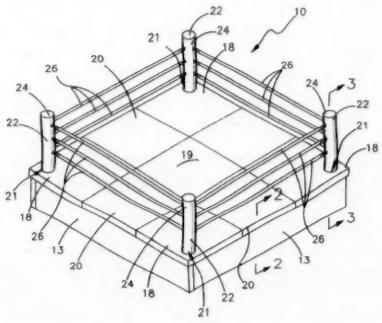
an elongated first tubular member;

an elongated second tubular member;

an elastic member connecting said first tubular member to said second tubular member, said elastic member further filling at least part of said first tubular member and said second tubular member; and

wherein said first tubular member has an aperture through a wall, and wherein said elastic member fills said aperture.

US 6,340,334 B1
PORTABLE FIGHT RING
Jeff P. Olsen, and Joseph Gambino, both of 857 W. 28th, San Pedro, Calif. 90731
Filed Nov. 17, 2000, Appl. No. 714,926
Int. Cl. A63C *19/00*
U.S. Cl. 472—93 **19 Claims**



1. A portable fight ring comprising:

a base assembly;

a deck assembly being removably mounted upon said base assembly;

rope support members including posts extending upwardly from said deck assembly for interlocking said base assembly; and

rope members being extended between said posts and along a perimeter of said deck assembly;

wherein said base assembly includes side walls having ends attached together in an interlocking manner, each of said side walls having finger-like projections being spaced apart and extending outwardly from ends of said side wall, said finger-like projections of each of said side walls interlocking with said finger-like projections of an adjacent said side wall, said finger-like projections further having holes extending therethrough.

US 6,340,335 B1

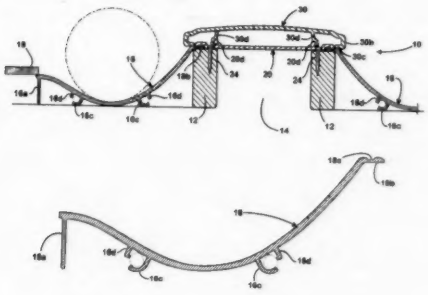
BOWLING LANE BALL RETURN CAPPING

Troy A. Recknagel, Muskegon, Mich., assignor to Brunswick Bowling & Billiards Corporation, Muskegon, Mich.

Continuation of application No. 09/004,184, filed on Jan. 8, 1998, now Pat. No. 6,106,404. This application Feb. 10, 2000, Appl. No. 501,929.

Int. Cl. A63D *1/08*; **B66C** *23/06*

U.S. Cl. 473—54 **11 Claims**



1. A bowling lane gutter comprising:

an elongated gutter of interconnected polymeric segments, said segments each having an underside having thereon a pair of pockets aligned with like pockets on adjacent segments, said pockets each comprising a loop, said pockets each being formed of a pair of legs which are resiliently biased toward each other such that there are four legs on the underside of the segment; and

connector elements between said segments, anchored in said pockets of adjacent gutter segments to form the gutter.

US 6,340,336 B1

GOLF PUTTER

Michael J Loconte, 3 Walnut Rd., Rocky Point, N.Y. 11778

Filed Mar. 26, 2000, Appl. No. 535,470

Int. Cl. A63B *53/04*

U.S. Cl. 473—251 **5 Claims**

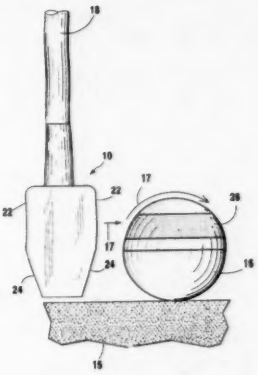
1. An apparatus for a golf club head for putting having a shaft and a head for striking a golf ball, the improvement comprising:

a) the putter head having a striking face, said face divided into an upper face and a lower face, said upper face and said lower face having a point of intersection;

b) said upper face being substantially vertical;

c) said lower face being formed at an angle away from the golf ball when positioned directly opposite said upper and lower faces;

d) said point of intersection of said upper face and said lower face located at a distance from the ground adapted to be effectively equal to the radius of the golf ball;



e) said putter head having a leading face and a trailing face, said leading face and said trailing face substantially forming mirror images of each other;

f) the shaft connecting to said putter head at a point intermediate the leading and trailing faces of said putter head;

g) means for attaching weights to said putter head;

h) grooves cut in and running longitudinally along an upper edge of said upper face for accepting weights; and

i) said weights having downwardly and inwardly projecting feet, said feet communicating with said grooves for connecting said weights to said putter head.

US 6,340,337 B2

GOLF CLUB HEAD

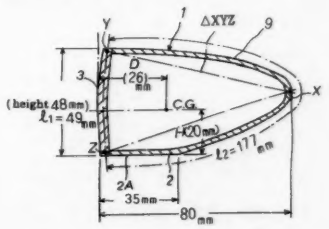
Yuu Hasebe; Hirato Shimasaki; Makoto Kubota; Daisuke Mikame, and Yasunori Imamoto, all of Tokyo, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Division of application No. 09/238,929, filed on Jan. 28, 1999, now Pat. No. 6,254,494. This application Mar. 13, 2001, Appl. No. 804,195.

Claims priority, application Japan, Jan. 30, 1998, 10-034008; May 12, 1998, 10-128792

Int. Cl. A63B *53/04*

U.S. Cl. 473—349 **2 Claims**

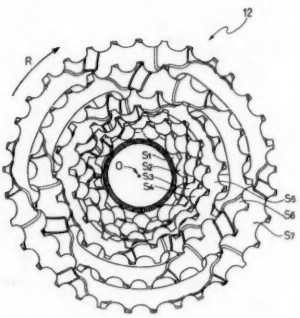


1. A golf club head of 250 cc or more in volume and having a hollow construction, in which an arcuate length (l_1) from a front edge of a crown portion of the head to a front edge of a sole portion, a circumferential length (l_2) from the crown front edge through the back side to the sole front edge, and a gravity depth (D) of the head in a cross section of the head in the direction of the head width at least in a sweet area of a front face, are in a relationship of $(l_1/l_2)\times D \leqq 100$ in the cross section.

US 6,340,338 B1
BICYCLE SPROCKET

Kenji Kamada, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Sep. 13, 2000, Appl. No. 661,201
Int. Cl. F16H *55/30*
U.S. Cl. 474—160 **48 Claims**



1. A sprocket for a multi-stage sprocket assembly of a bicycle comprising:

a sprocket body having a first axial side and a second axial side; and

a plurality of circumferentially spaced teeth extending radially and outwardly from an outer periphery of said sprocket body, said teeth including

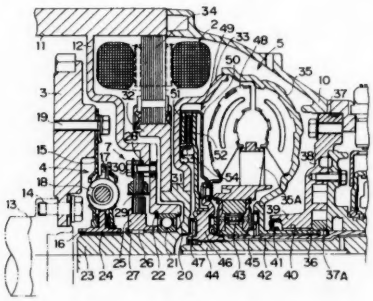
a plurality of up shift teeth including a first up shift tooth, a second up shift tooth located adjacent said first up shift tooth and a third up shift tooth located adjacent said second up shift tooth,

said first, second and third up shift teeth being so dimensioned to maintain alignment of a bicycle chain to prevent an up shifting of the chain when an outer link plate of the bicycle chain meshes with said second up shift tooth, and to shift the bicycle chain when an inner link plate meshes with said second up shift tooth along a first up shift path.

US 6,340,339 B1
VEHICLE DRIVE DEVICE

Atsushi Tabata, Okazaki; Yutaka Taga, Aichi-ken; Ryuji Ibaraki; Shuji Nagano, both of Toyota; Seiji Nakamura, Nagoya, and Masaya Amano, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 7, 1999, Appl. No. 389,755
Claims priority, application Japan, Sep. 7, 1998, 10-253120; Sep. 7, 1998, 10-253122; Sep. 17, 1998, 10-263623; Sep. 18, 1998, 10-265514
Int. Cl. F16H *3/72;37/06*
U.S. Cl. 475—5 **31 Claims**



1. A vehicle drive device comprising:

a motor including a rotating member; and

a hydraulic transmission provided adjacent the motor in a direction of a rotational center axis and having a shell housing a fluid, the hydraulic transmission including a first rotating member and a second rotating member,

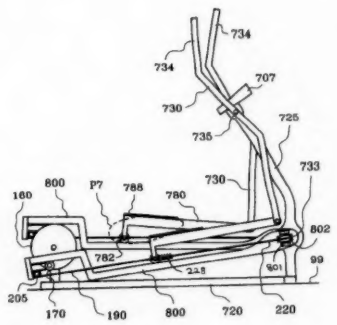
the first rotating member extending axially in one direction to said shell, integrally coupled to said shell and said rotating member of said motor and rotatably supported by a bearing member while an axial movement of said first rotating member is prohibited,

the second rotating member extending axially to said shell and in a direction opposite to the one direction of said first rotating member, integrally coupled to said shell and rotatably supported by a bearing member while an axial movement of said second rotating member is allowed.

US 6,340,340 B1
EXERCISE METHOD AND APPARATUS

Kenneth W. Stearns, P.O. Box 55912, Houston, Tex. 77255, and Joseph D. Maresh, P.O. Box 645, West Linn, Oreg. 97068-0645

Continuation-in-part of application No. 09/207,057, filed on Dec. 7, 1998, now Pat. No. 6,063,009, which is a continuation of application No. 08/837,986, filed on Apr. 15, 1997, now Pat. No. 5,845,954. This application May 15, 2000, Appl. No. 570,751.
Int. Cl. A63B *69/16;22/00*
U.S. Cl. 482—52 **20 Claims**



1. An exercise apparatus, comprising:

a frame designed to rest upon a floor surface;

a left crank and a right crank, wherein each said crank is rotatably mounted on the frame and rotatable about a crank axis;

a left crank support and a right crank support, wherein each said crank support is mounted on a respective crank at a radial distance from the crank axis, and the left crank support and the right crank support cooperate to define a crank diameter;

a left rail and a right rail, wherein each said rail is movably connected between a respective crank support and the frame in such a manner that a first end of each said rail is supported by a roller, and an opposite, second end of each said rail is pivotally connected to a pin;

a left rocker link and a right rocker link, wherein each said rocker link is pivotally mounted on the frame;

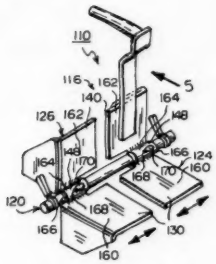
a left foot support and a right foot support, wherein each said foot support is rollably mounted on an intermediate portion of a respective rail and pivotally connected to a respective rocker link; and

a left cable assembly and a right cable assembly, wherein each said cable assembly links rotation of a respective crank to movement of a respective foot support through a range of motion which is twice the crank diameter.

US 6,340,341 B1
WEIGHTED DEVICE FOR MAINTAINING THE ARM IN A PROPER POSITION FOR MAXIMIZING PECTORAL MUSCLE EXERCISING

Farrell W. Purcell, 1952 Everding St., Eureka, Calif. 95503

Filed Feb. 7, 2000, Appl. No. 498,972
Int. Cl. A63B *21/00;21/06*
U.S. Cl. 482—108 **16 Claims**



1. A weight device for maintaining the arm in a proper position for maximizing pectoral muscle exercising, comprising:

A) an arm-capturing bracket;

B) a hand-engaging handle extending from said arm-capturing bracket; and

C) a weight-engaging shaft extending from said arm-capturing bracket and having a pair of ends, wherein said arm-capturing bracket comprises:

i) an upper arm-capturing bracket; and

ii) a lower arm-capturing bracket that is fixedly attached to said upper arm-capturing bracket of said arm-capturing bracket, wherein said upper arm-capturing bracket of said arm-capturing bracket comprises a U-shaped plate that has:

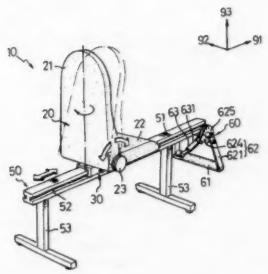
a) a top plate that is horizontally-oriented and has a pair of longitudinal edges; and

b) a pair of side plates that are vertically-oriented, depend from said pair of longitudinal edges of said top plate of said upper arm-capturing bracket of said arm-capturing bracket, respectively, and have shoulder-facing edges.

US 6,340,342 B1
MULTIPURPOSE EXERCISING APPARATUS

Jason Lee, 6Fl.-2, No. 666-8, Sec. 2, Chung Hua Rd., Taipei, Taiwan

Filed Sep. 7, 1999, Appl. No. 390,776
Claims priority, application Taiwan, Jun. 16, 1999, 88209967 U
Int. Cl. A63B *26/00*
U.S. Cl. 482—142 **6 Claims**



1. A multipurpose exercising apparatus adapted to provide various exercising postures in order to exercise different muscle groups of the human body, one muscle group at a time, the apparatus comprising:

a rack, said rack comprising a main rod member linearly extending in a direction designated as X-axis direction, and at least one stand fastened to said main rod member and adapted to support said main rod member above a floor;

a mattress unit, said mattress unit comprising a back mattress, a seat mattress, an adjustment mechanism, and a coupling mechanism, said back mattress and said seat mattress pivotally connected to each other, said adjustment mechanism adjusts tilting of said back mattress from said seat mattress any angle between said back mattress and said seat mattress, said coupling mechanism fastened to said seat mattress at a bottom side thereof and coupled to the main rod member of said rack to enable said mattress unit to be moved on said rack in the X-axis and fixable in selected positions along the main rod member;

a damping unit mounted on said rack, said damping unit comprising a first actuating bar, a linking mechanism, and a damping force source device for providing resistance force, said linking mechanism having two opposite ends respectively coupled to said first actuating bar and said damping force source device adapted to enable the user to change positions of said first actuating bar with respect to said damping force source device and to receive a damping force when a force is applied to said first actuating bar;

said coupling mechanism comprises a rotating mechanism for enabling said mattress unit to be rotated to a desired direction;

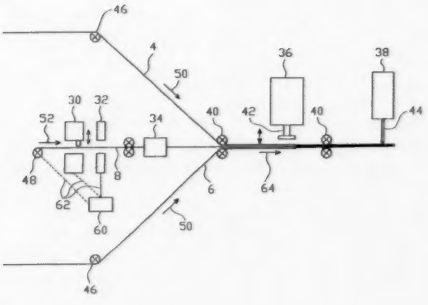
said linking mechanism comprises a link and a connector, wherein said connector is pivotally connected to said rack, said link having one end thereof coupled to said first actuating bar, and an opposite end thereof pivotally connected to said connector, wherein a relative position of said link with respect to said connector can be changed to change position of said first actuating bar; and

said damping force source device has one end thereof coupled to said rack, and an opposite end thereof coupled to said linking mechanism, such that upon actuation of force on said actuating bar, said damping force source device resists rotational motion of said connector.

US 6,340,343 B1
METHOD AND APPARATUS FOR PRODUCING FOIL BAGS

Hans-Peter Wild, Zug, Switzerland, and Eberhard Kraft, Neckarbischofsheim, Germany, assignors to Indag GmbH & Co. Betriebs-KG, Germany

Filed May 24, 1999, Appl. No. 317,000
Claims priority, application Germany, Jun. 4, 1998, 198 25 080
Int. Cl. B31B *1/00*
U.S. Cl. 493—10 **21 Claims**



1. A method of producing foil bags, each foil bag having a width and corresponding side edges, the method comprising:

supplying first and second side foils from which a pair of side walls of the foil bag are formed;

supplying a bottom foil;

punching a plurality of holes into the bottom foil, said holes being spaced apart in a running direction of the bottom foil at a distance corresponding to the width of a foil bag;

folding the bottom foil along a center line substantially parallel to the running direction of the bottom foil, the holes being substantially symmetrical with respect to the center line;

simultaneously determining with a single sensor whether the bottom foil is moving, whether the holes have been produced in the bottom foil, and whether the bottom foil is present for assembly;

placing the first side foil, the folded bottom foil and the second side foil at least partially one upon the other in a layer sequence having that relative orientation;

connecting the layer sequence at the side edges of the foil bag in such a manner that at the place where the bottom foil is positioned between the side foils, the side edges are only directly connected to each other through the punched holes; and

cutting the connected portions of the layer sequence such that a side-edge connection portion is respectively divided between two foil bags.

US 6,340,344 B1

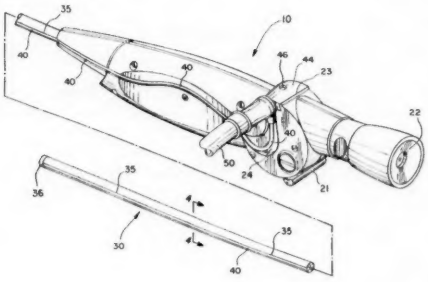
ENDOSCOPE WITH A REMOVABLE SUCTION TUBE

Kent L. Christopher, Denver, Colo., assignor to Evergreen Medical Incorporated, Denver, Colo.

Filed Jul. 18, 2000, Appl. No. 618,410

Int. Cl. A61B *1/12*

U.S. Cl. 600—156 **18 Claims**



1. An endoscope comprising:

an elongated flexible probe having a proximal end and a distal end with a slot extending at least a substantial portion of the length of said probe and having an opening on said distal end of said probe;

a housing attached at said proximal end of said probe controlling the direction and operation of said probe;

a suction tube removably insertable into said slot on said probe with a distal opening adjacent to said distal opening of said slot; and

a suction tube connector at the proximal end of said suction tube removably securable to said housing and having a connector for removable attachment to an external suction line.

US 6,340,345 B1

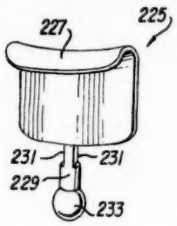
SURGICAL RETRACTOR BLADE AND HANDLE FOR MOVEMENT WITH TWO DEGREES OF FREEDOM

John Lees, Richmond, Va.; Jerry M. Brown, Sewaren, N.J., and Gregory Diamont, New York, N.Y., assignors to Automated Medical Products Corp., Sewaren, N.J.

Provisional application No. 60/124,932, filed on Mar. 18, 1999. This application Feb. 25, 2000, Appl. No. 513,139.

Int. Cl. A61B *17/02*

U.S. Cl. 600—226 **3 Claims**



1. A surgical retractor blade and handle assembly comprising:

a surgical retractor blade;

a handle; and

attaching means for removably attaching the surgical retractor blade to the handle such that the surgical retractor blade moves relative to the handle with more than one degree of freedom by forming a ball and socket joint between the surgical retractor blade and the handle such that the surgical retractor blade moves relative to the handle with at least two degrees of freedom; wherein said attaching means comprises:

on the surgical retractor blade, a shaft ending in a ball; and

on the handle, a portion with (i) a circular opening for engaging with the ball to define the ball and socket joint and (ii) a slot extending from the circular opening for receiving the shaft for engaging the ball with the opening and disengaging the ball from the opening; and wherein:

the slot has a width D1;

the shaft has a diameter D2 in a first direction and a diameter D3 in a second direction; and

D2<D1<D3.

US 6,340,346 B1

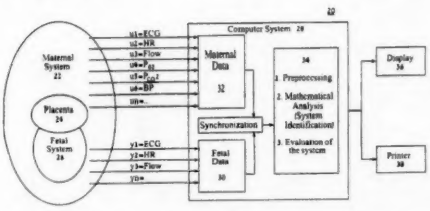
METHOD AND SYSTEM FOR SYSTEM IDENTIFICATION OF PHYSIOLOGICAL SYSTEMS

Yael Almog, Rosh Haiyin, and Eran Toledo, Tel Aviv, both of Israel, assignors to T.A.O. Medical Technologies Ltd., Herzliya, Israel

Filed Nov. 26, 1999, Appl. No. 449,752

Int. Cl. A61B *5/00*

U.S. Cl. 600—300 **27 Claims**



1. A method of determining the well being of a placenta in a pregnant woman having a maternal-placenta-fetal system, the method comprising the steps of:

(a) simultaneously monitoring selected maternal and fetal physiological signals;

(b) preprocessing said maternal and fetal physiological signals by independently non-linearly or linearly mathematically

decomposing said maternal and fetal physiological signals into mathematical constituents thereof and collecting constituents of said mathematical constituents having a highest degree of linearity and/or simplicity;

(c) using said constituents having said highest degree of linearity and/or simplicity for identifying a mathematical model describing the maternal-placenta-fetal system, and mathematical parameters describing said model; and

(d) determining, according to said mathematical model and said mathematical parameters describing said mathematical model, the well being of the placenta.

US 6,340,347 B1

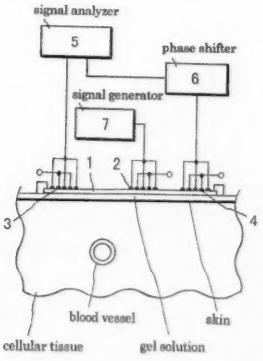
VIBRATION DISPLACEMENT SENSING DEVICE

Kohji Toda, 1-49-18 Futaba, Yokosuka, Japan, 239-0814

Filed Apr. 21, 2000, Appl. No. 557,056

Int. Cl. A61B *8/00*

U.S. Cl. 600—438 **8 Claims**



1. A vibration displacement sensing device comprising:

a piezoelectric substrate having two end surfaces;

an input interdigital transducer;

a first output interdigital transducer;

a second output interdigital transducer, all said input-, said first output-, and said second output interdigital transducers being formed on one end surface of said piezoelectric substrate; and

a signal analyzer,

said piezoelectric substrate, said input interdigital transducer, said first- and second output interdigital transducers forming a sensing assembly,

said input interdigital transducer receiving an input electric signal, exciting an elastic wave, composed of a leaky- and a non-leaky components, in said piezoelectric substrate, radiating said leaky component of said elastic wave in the form of a longitudinal wave toward a first material located inside a second material which has an acoustic impedance different from that of said first material and is in contact with the other end surface of said piezoelectric substrate, and making said first material reflect said longitudinal wave back,

said first output interdigital transducer detecting a reflected longitudinal wave as a first delayed electric signal,

said second output interdigital transducer detecting said non-leaky component of said elastic wave as a second delayed electric signal,

said signal analyzer sensing a vibration displacement caused by said first material from a difference between said first- and second delayed electric signals.

US 6,340,348 B1

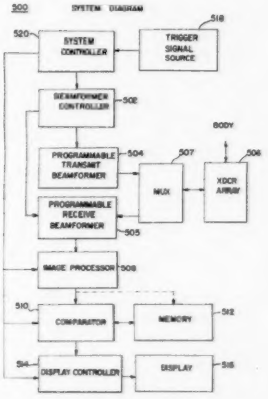
CONTRAST AGENT IMAGING WITH DESTRUCTION PULSES IN DIAGNOSTIC MEDICAL ULTRASOUND

Sriram Krishnan, San Jose; Gregory L. Holley, Mountain View; Edward A. Gardner, San Jose, and Samuel H. Maslak, Woodside, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Jul. 2, 1999, Appl. No. 348,246

Int. Cl. A61B *8/00*

U.S. Cl. 600—447 **121 Claims**



1. A method for destroying contrast agent in a human or animal with medical diagnostic ultrasound equipment, comprising the step of using a multi-beam beamformer to simultaneously fire a plurality of beams of destruction pulses in a region of interest of said human or animal.

US 6,340,349 B1

HAND-HELD NON-INVASIVE BLOOD PRESSURE MEASUREMENT DEVICE

G. Kent Archibald, Vadnais Heights; Timothy G. Curran, Ramsey; Orland H. Danielson, Roseville; Marius O. Poliac, St. Paul, and Roger C. Thede, Afton, all of Minn., assignors to Medwave, Inc., Arden Hills, Minn.

Continuation of application No. 08/912,139, filed on Aug. 15, 1997, now Pat. No. 5,941,828, which is a continuation-in-part of application No. 08/388,751, filed on Feb. 16, 1995, now Pat. No. 5,797,850, which is a continuation-in-part of application No. 08/227,506, filed on Apr. 14, 1994, now Pat. No. 5,450,852, which is a continuation-in-part of application No. 08/150,382, filed on Nov. 9, 1993, now abandoned. This application Apr. 22, 1999, Appl. No. 296,994.

This patent is subject to a terminal disclaimer.

Int. Cl. A61B *5/02*

U.S. Cl. 600—494 **8 Claims**

1. A non-invasive blood pressure measurement device comprising:

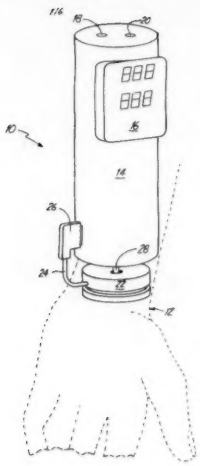
a housing shaped to be gripped by a user to apply force toward the artery;

a transducer having a sensing surface;

a flexible diaphragm for being positioned over the underlying artery wherein the flexible diaphragm is mounted on a sensor assembly which is connected to the housing to pivot about at a position proximate the flexible diaphragm;

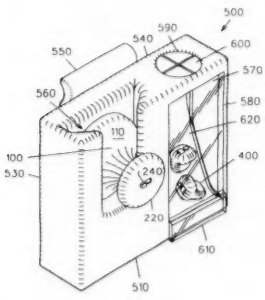
interface means between the flexible diaphragm and the sensing surface of the transducer for transmitting pressure from the diaphragm to the transducer;

signal producing means connected to the transducer for producing output signals corresponding to the sensed pressure data; and



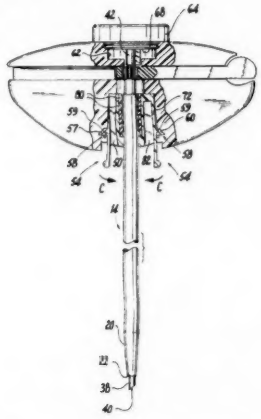
processing means for receiving the output signals from the signal producing means, for deriving a plurality of parameters using sensed pressure and for determining a blood pressure value using the derived parameters.

US 6,340,350 B1
TRANSMITTER/RECEIVER STETHOSCOPE AND HOLDER THEREFOR
Juanita P. Simms, 3881 Rock Creek Rd., Rantoul, Kans. 66079
Filed Jan. 6, 2000, Appl. No. 479,460
Int. Cl. A61B *7/04*
U.S. Cl. 600—528 **20 Claims**



1. An electronic stethoscope, comprising:
a chestpiece comprising:
a sound sensing device for sensing auscultatory sounds and generating a signal corresponding to said sounds;
a transmitter coupled to said sound sensing device for transmitting said signal;
a handle coupled to said sound sensing device and configured for gripping between two fingers of a user's hand;
an earpiece comprising:
a receiver adapted to be inserted into a user's ear for receiving said signal and converting said signal into an audible signal; and
a casing having a channel formed in a front wall thereof, said channel defining an open upper end adapted to retain said sound sensing device therein.

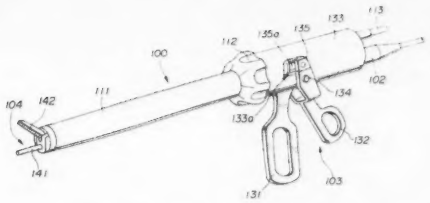
US 6,340,351 B1
CONNECTOR FOR A REPLACEABLE BIOPSY NEEDLE
Alec Goldenberg, 530 First Ave., Suite 9N, New York, N.Y. 10015
PCT No. PCT/US98/19360, § 371 Date Mar. 17, 2000, § 102(e) Date Mar. 17, 2000, PCT Pub. No. WO99/13776, PCT Pub. Date Mar. 25, 1999
Continuation-in-part of application No. 08/932,109, filed on Sep. 17, 1997, now Pat. No. 5,843,001. This PCT application Sep. 16, 1998, Appl. No. 509,020.
This patent is subject to a terminal disclaimer.
Int. Cl. A61B *5/00*
U.S. Cl. 600—567 **12 Claims**



1. An assembly for connecting the proximal end of a medical device to a handle, comprising:
a body rigidly attached to the proximal end of the medical device;
a handle having an aperture which is sized to receive the body;
means associated with the body and with the handle for snap-lock engaging the body and handle together and for selectively disengaging the body and handle; and
a lever extending from the snap-lock engaging means, the lever being manually movable to a position which permits disengagement of the body and the handle.

US 6,340,352 B1
ULTRASOUND TREATMENT SYSTEM
Mitsumasa Okada; Toshiya Sugai, both of Hachioji; Yoshitaka Honda, Tokorozawa; Manabu Ishikawa, Hachioji, and Tomohisa Sakurai, Sagamihara, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Division of application No. 08/938,523, filed on Sep. 26, 1997, which is a continuation-in-part of application No. 08/627,500, filed on Apr. 4, 1996, now abandoned. This application Oct. 25, 1999, Appl. No. 427,021.
Claims priority, application Japan, Apr. 6, 1995, 7-081466; Jul. 28, 1995, 7-193250; Jul. 31, 1995, 7-195155; Jul. 31, 1995, 7-195156
This patent is subject to a terminal disclaimer.
Int. Cl. A61N *7/00;* **A61B** *17/00;17/20*
U.S. Cl. 601—2 **17 Claims**

2. An ultrasound treatment system, comprising:
ultrasonic transducers for generating ultrasonic vibrations;
a handpiece including said ultrasonic transducers and serving as an operation unit;
a probe connected to said ultrasonic transducers, and serving as a vibration conveying means for conveying ultrasonic vibrations to a distal member constituting a stationary section of a treatment unit used to treat a living tissue;



a sheath serving as a protective member for shielding said probe;

a holding member opposed to said distal member at the distal end of said sheath, and constituting a movable section of said treatment unit which clamps a living tissue in cooperation with said distal member;

a manipulating means to be handled for clamping or freeing a living tissue using said holding member and distal member;

an operation member for driving said holding member responsively to a movement of said manipulating means;

a turning mechanism for turning said treatment unit relative to said manipulating means with tie axial direction of said ultrasonic transducers as a center; and

an electrically isolating means for electrically isolating said operation member and said probe from each other and for electrically isolating said operation member and probe from the outside.

US 6,340,353 B1

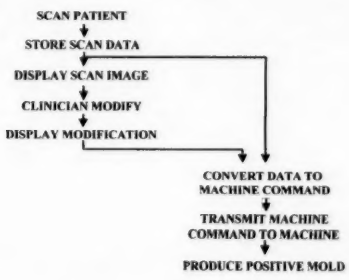
MANUFACTURE OF CRANIAL REMODELING ORTHOSIS

Jeanne K. Pomatto, 7665 E. Larkspur, Scottsdale, Ariz. 85260, and R. Craig Pomatto, 4215 N. Civic Center Blvd., #253, Scottsdale, Ariz. 85251

Filed Sep. 30, 1996, Appl. No. 720,528

Int. Cl. A61F *5/00;* **G06F** *19/00*

U.S. Cl. 602—17 **10 Claims**



2. A method for producing a cranial orthosis for a patient, comprising:

scanning the head of said patient to produce scan data representative of a three dimensional image of the head;

automatically utilizing said data to produce a first three dimensional representation of the head including the top portion thereof;

modifying said first representation to produce a second representation, said second representation being a desired corrected three dimensional shape for the head;

utilizing said second representation to produce a corrective mold; and

utilizing said mold to produce a cranial orthosis for the head.

US 6,340,354 B1

AUTOMATED COMPULSORY BLOOD EXTRACTION SYSTEM

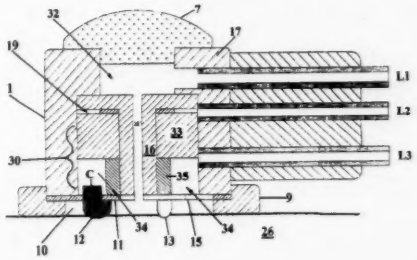
Christopher L Rambin, 620 1/2 Durden Ave., Ruston, La. 71270

Provisional application No. 60/017,633, filed on May 17, 1996. This application May 17, 1997, Appl. No. 858,097.

Int. Cl. A61B *17/20*

U.S. Cl. 604—22 **31 Claims**

Cut-away Side View



1. A mechanical apparatus for stimulating blood circulation in tissue in a patient, comprising:

a device having a housing having a base having formed therein an extraction chamber having a periphery,

a blade having a cutting edge associated with said extraction chamber, said blade configured to move relative to said base so as to penetrate the tissue so as to facilitate the discharge of blood from the tissue;

said periphery of said extraction chamber configured to form a seal with the tissue of the patient about said blade when said blade is applied to the patient, said extraction chamber further comprising suction means for providing suction within said extraction chamber to collect the blood discharged from the tissue of the patient.

US 6,340,355 B1

INTRAOCULAR IRRIGATION/ASPIRATION DEVICE

Graham David Barrett, 56 Dampier Avenue, City Beach, W.A. 6015, Australia

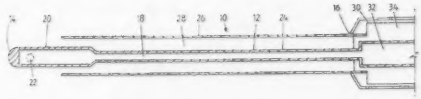
PCT No. PCT/AU97/00536, § 371 Date Feb. 19, 1999, § 102(e) Date Feb. 19, 1999, PCT Pub. No. WO98/07398, PCT Pub. Date Feb. 26, 1998

PCT Filed Aug. 22, 1997, Appl. No. 242,749

Claims priority, application Australia, Aug. 22, 1996, PO1787

Int. Cl. A61M *1/00*

U.S. Cl. 604—27 **19 Claims**



1. An intraocular irrigation/aspiration device for aspirating emulsified material from an intraocular cavity, the device comprising:

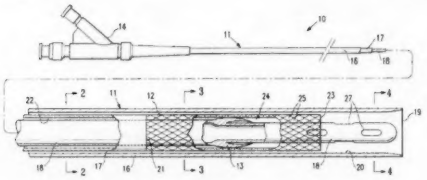
a sleeve having proximal and distal ends, the proximal end adapted to be coupled to an irrigation source; and

a rigid shaft disposed concentrically in the sleeve and spaced apart from the sleeve to define an annular irrigation channel, the shaft having proximal and distal ends, and a lateral surface, the proximal end adapted to be coupled to a suction source,

the distal end of the shaft disposed in fixed relation extending beyond the distal end of the sleeve and comprising a tip including an opening in the lateral surface having a preselected size, a lumen extending from the opening to the proximal end,

the lumen having a first portion defining a chamber with a first cross-sectional area that communicates with the opening, and a second portion with a second cross-sectional area disposed between the chamber and the proximal end, the second cross-sectional area being smaller than the first cross-sectional area, wherein the first and second cross-sectional areas and pre-selected size of the opening are selected to control pressure fluctuations in the intraocular cavity arising from post-occlusion surge events.

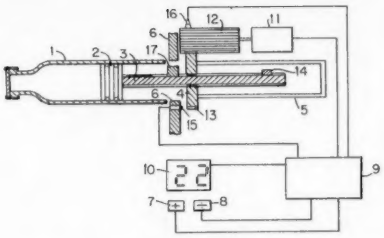
US 6,340,356 B1
INTRALUMINAL CATHETER WITH EXPANDABLE TUBULAR OPEN-WALLED ELEMENT
José Antonio Navia, Suipacha 1308 4B, 1011 Buenos Aires, Argentina, and Jorge Luis Jordana, Juana Azurduy 2304, 1429 Buenos Aires, Argentina
Filed Sep. 23, 1997, Appl. No. 935,783
Int. Cl. A61M *29/00*
U.S. Cl. 604—104 **32 Claims**



1. An intraluminal catheter, comprising:
a) an elongated shaft having a proximal end, a distal end, and a lumen;
b) a tubular open-walled element having a proximal end, a distal end, and a lumen, being secured to the shaft, and being at least in part expandable to an expanded diameter within a body lumen to contact a wall defining the body lumen and thereby releasably secure the catheter within the body lumen, the distal end of the expanded tubular open-walled element being located distal to the shaft distal end; and
c) an elongated cannula member slidably disposal within the lumen of the shaft, and slidably displaceable within the lumen of the tubular open-walled element and through a distal port in the distal end of the tubular open-walled element, having a single lumen and at least one port in a distal section in fluid communication with the cannula member single lumen, the port providing an opening to an outer surface of the cannula member.

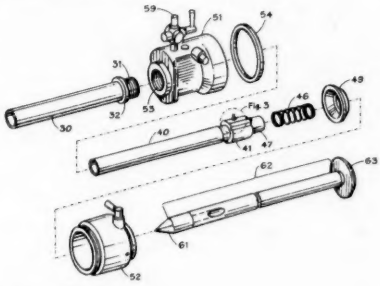
US 6,340,357 B1
DOSE SETTING DEVICE
Jens Ulrik Poulsen, Virum; Henrik Ljunggreen, Ballerup, and Lars Hofmann Christensen, Frederiksberg, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark
Division of application No. 08/878,955, filed on Jun. 19, 1997, now Pat. No. 5,928,201. This application Jul. 26, 1999, Appl. No. 360,263.
Claims priority, application Denmark, Jul. 5, 1996, 0750/96
This patent is subject to a terminal disclaimer.
Int. Cl. A61M *5/00*
U.S. Cl. 604—208 **7 Claims**

1. A drug delivery device for dispensing set doses from a cartridge of the type containing medicine sufficient for a number of dosed injections and a piston which can be moved forward inside the cartridge to expel doses of medicine, said device comprising:
a cartridge holder having open and closed positions, and into which a cartridge can be loaded when in an open position;
a cartridge holder switch which generates a signal when said cartridge holder is moved from said open position to said closed position;
an electrical motor;
a piston rod coupled to said motor for movement responsive to activation of said motor; and



an electronic circuit which receives said signal from said cartridge holder switch and activates said motor responsive to receiving said signal to move said piston rod in a first direction, towards the piston of a cartridge which has been loaded in said cartridge holder; and wherein said electronic circuit further includes a sensor to sense the power consumption of said motor and stops said motor, and thereby the movement of said piston rod in said first direction, upon detecting a predetermined increase in power consumption, indicating that the piston rod has encountered such a piston, whereby said circuit automatically sets a desired initial position of said piston rod whenever a new cartridge is loaded.

US 6,340,358 B1
TROCAR
Terry L. Bohannon; Peter T. O'Heeron, both of Houston; James R. Ogle, Austin, and Lawrence W. Moser, Houston, all of Tex., assignors to NeoSurg Technologies, Inc., Houston, Tex.
Continuation of application No. 09/256,009, filed on Feb. 23, 1999. This application Jul. 13, 2000, Appl. No. 615,618.
Int. Cl. A61M *5/00*
U.S. Cl. 604—264 **1 Claim**



1. A trocar, comprising:
(a) a body assembly;
(b) a cannula assembly, comprising an outer cannula attached to the body assembly to define a bore therethrough and an inner cannula which is inserted in the bore and which may move axially from an extended position to a retracted position, the inner cannula having proximal and distal ends, a length which is greater than the length of the outer cannula, and a pin proximate its proximal end;
(c) an obturator assembly in the bore which has a sharp end that is shielded by the inner cannula when the inner cannula is in its extended position and which is exposed when the inner cannula is in its retracted position;
(d) an inner cannula control mechanism in the body assembly, which has locked and unlocked positions, and which is activated during surgical insertion of the trocar, comprising:
(i) a mounting mechanism which is attached to the trocar inside the body assembly to prevent rotation of the inner cannula and to prevent axial movement of the inner cannula in the locked position, the mounting mechanism including a locking arm assembly comprising two independently

spring-loaded locking arms for engaging the proximal end of the inner cannula to prevent axial movement of the inner cannula in the locked position; and

(ii) a trigger mechanism for moving the locking arms from engagement with the inner cannula to allow the inner cannula to move axially inward to permit the pin on the inner cannula to separate the two locking arms of the locking arm assembly;

(e) a spring in the body assembly which is compressed by the rearward axial movement of the inner cannula and which exerts a force on the inner cannula to return it to its extended position once the obturator has passed through the abdominal wall of the patient, the return of the inner cannula to its extended position allowing one of the locking arms to lock the inner cannula in the extended position.

US 6,340,359 B1

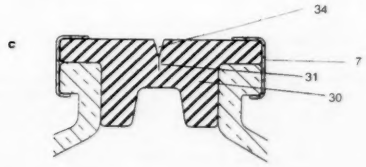
PROCESS FOR REVERSIBLY COMPRESSING PRECHANNELLED/PREWEAKENED DIAPHRAGMS

David G. Silverman, 3 Meeker Hill Rd., Redding, Conn. 06896

Provisional application No. 60/033,720, filed on Dec. 20, 1996. This application Dec. 19, 1997, Appl. No. 994,097.

Int. Cl. A61B *19/00*

U.S. Cl. 604—415 **21 Claims**



1. A process of reversibly increasing a compression pressure on a compromised diaphragm, which comprises the steps of:

compromising the diaphragm to enhance its penetrability;

then applying peripheral pressure the diaphragm, to seal the diaphragm;

then reducing the pressure; and then permitting an insertion member to penetrate the diaphragm in its compromised region for fluidic communication after said reduction of the pressure.

US 6,340,360 B1

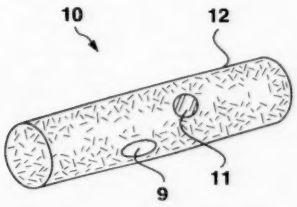
SYSTEM FOR CELL GROWTH

Mark B. Lyles, San Antonio, Tex.; Charles A. McLaughlin, Tega Cay, S.C.; Glenn A. Halff, San Antonio, and William A. Mallow, Helotes, both of Tex., assignors to MED USA, San Antonio, Tex.

Continuation of application No. 08/569,107, filed on Mar. 18, 1996, now Pat. No. 5,964,745, which is a continuation of application No. 08/087,615, filed on Jul. 2, 1993, now abandoned. This application Oct. 13, 1998, Appl. No. 170,574.

Int. Cl. A61K *9/22*

U.S. Cl. 604—890.1 **6 Claims**



1. A porous fused fiber composition useful for the culturing of cells, said composition manufactured from alumina fibers, silica fibers, and boron nitride.

US 6,340,361 B1

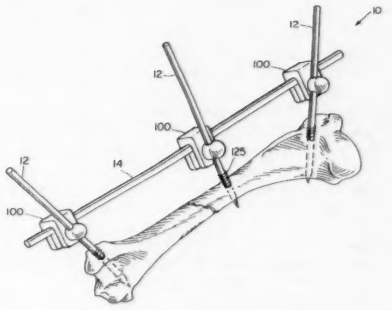
EXTERNAL FIXATOR CLAMP AND SYSTEM

Karl H. Kraus, 20 Blackstone St., Sutton, Mass. 01590, and Harold M. Wotton, III, 544 Main St., Fiskdale, Mass. 01518

Division of application No. 08/841,529, filed on Apr. 23, 1997, now Pat. No. 5,976,133. This application Sep. 2, 1999, Appl. No. 388,875.

Int. Cl. A61B *17/58*

U.S. Cl. 606—59 **11 Claims**



1. An aiming device for installing fixator pins, comprising:

a frame attached to first and second connecting rods, the frame having at least one proximal slot for receiving the first connecting rod and two distal slots for receiving the second connecting rod, the distal slots adjusting the position of the fixator pin to be stalled either above or below the second connecting rod and allowing clamps having pin connectors to be installed to the second connecting rod, the pin connectors aligned with the position of installed fixator pins to attach the installed fixator pins to the second connecting rod; and

a cannula mounted to the frame, the cannula having an opening that provides a guide for directing a fixator pin to be installed through a bone for fixating the bone between the connecting rods.

US 6,340,362 B1

PLATE FOR JOINING A PELVIC FRACTURE

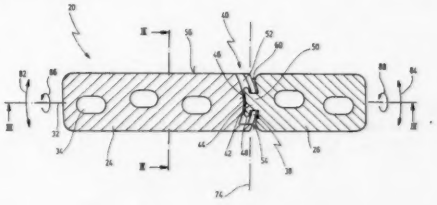
Wolfgang Pierer, Chemnitz, and Hubert Zeidler, Neukirchen, both of Germany, assignors to IMPAQ GmbH Medizintechnik, Lauterbach-Sulzbach, Germany

Continuation of application No. PCT/EP99/00374, filed on Jan. 21, 1999. This application Jul. 19, 2000, Appl. No. 619,031.

Claims priority, application Germany, Jan. 22, 1998, 198 02 229

Int. Cl. A61B *17/80*

U.S. Cl. 606—71 **12 Claims**



1. A plate for joining a fracture of the pelvis, wherein said plate can be fastened on either side of said fracture by means of fastening means to pelvic bone portions to be connected, said plate comprising:

at least two parts arranged along an axial direction of said plate,

a first engaging means provided on one of said parts,

second engaging means provided on the other of said parts,

wherein said first engaging means and said second engaging means are intended to connect said two parts with each other, and wherein said first and second engaging means are formed such that said two parts are secured to one another in said axial direction and in a transverse direction to a plate plane, and that said two parts are moveable relative to one another in a limited pivotal range about said axial direction.

US 6,340,363 B1

IMAGE GUIDED VERTEBRAL DISTRACTOR AND METHOD FOR TRACKING THE POSITION OF VERTEBRAE

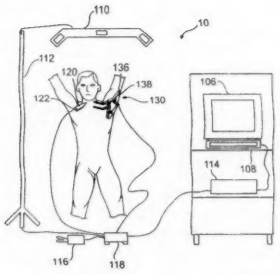
Ciaran Bolger, Bristol, United Kingdom; Anthony J. Melkent, Germantown, Tenn., and Kurt R. Smith, Boulder, Colo., assignors to Surgical Navigation Technologies, Inc., Louisville, Colo.

PCT No. PCT/US99/23451, § 371 Date Sep. 6, 2000, § 102(e) Date Sep. 6, 2000, PCT Pub. No. WO00/21442, PCT Pub. Date Apr. 20, 2000

Provisional application No. 60/103,618, filed on Oct. 9, 1998. This PCT application Oct. 8, 1999, Appl. No. 555,885.

Int. Cl. A61F *5/04*

U.S. Cl. 606—90 **26 Claims**



12. A method for tracking the position of vertebrae using a vertebral distractor having first and second arms movable along a shaft in relation to one another, when performing anterior spinal surgery, said method comprising the steps of:

engaging said vertebral distractor having at least one electrically detectable array attached thereto with said vertebrae;

employing a surgical navigation system with a computer controller and a position sensing unit for communicating with said array and tracking the position of said vertebral distractor in three-dimensioned space; and

registering the location of said vertebrae relative to said distractor by contacting said vertebrae with a calibration probe tracked by said position sensing unit.

US 6,340,364 B2

VASCULAR FILTERING DEVICE

Nozomu Kanesaka, 81 Greenwoods Rd., Old Tappan, N.J. 07675

Continuation-in-part of application No. 09/425,218, filed on Oct. 22, 1999. This application Jan. 26, 2001, Appl. No. 769,312.

Int. Cl. A61M *29/00*

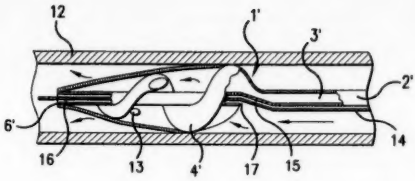
U.S. Cl. 606—200 **5 Claims**

1. A vascular filtering device, comprising:

a flexible shaft having a side surface, a passageway extending inside the flexible shaft, and a side opening formed in the side surface at a distal end portion of the shaft and communicating with the passageway,

an inflatable member having a spiral form and attached to the distal end portion of the shaft to communicate with the passageway through the side opening of the shaft, said inflatable member having an outer side surface, and an inner side surface entirely fixed to the side wall of the shaft, and

a filter member having a distal end sealingly fixed to the distal end portion of the shaft and an open end at a side opposite to the distal end thereof, said filter member extending along the flexible shaft and fixed onto the outer side surface of the inflatable member along an entire length thereof so that when the inflatable member is inflated, the filter member is enlarged to allow a foreign substance to enter into the filter member through the open end, and when the inflatable member is deflated, the filter member is disposed close to the side surface of the shaft.



US 6,340,365 B2

DISMOUNTABLE MEDICAL INSTRUMENT WITH A SELF-ORIENTING COUPLING

Horst Dittrich, Immendingen; Uwe Bacher, Tuttlingen; Jürgen Rudischhauser, Tuttlingen, and Klaus M. Irion, Tuttlingen, all of Germany, assignors to Karl Storz GmbH & Co. KG, Germany

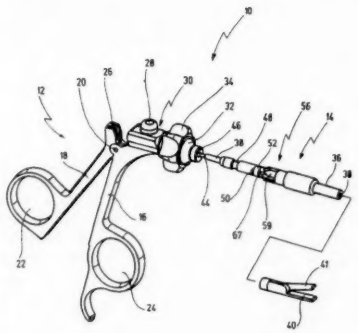
PCT No. PCT/EP98/03065, § 371 Date Apr. 2, 1999, § 102(e) Date Apr. 2, 1999, PCT Pub. No. WO98/53743, PCT Pub. Date Dec. 3, 1998

PCT Filed May 25, 1998, Appl. No. 230,396

Claims priority, application Germany, May 27, 1997, 197 22 062

Int. Cl. A61B *17/28*

U.S. Cl. 606—205 **17 Claims**



1. A medical instrument having several disassemblable components, one of said several components being rotatable with respect to another one of said several components by means of a rotary element arranged on said another one of said several components, and

a coupling for a detachable rotationally engaged connection of said one of said several components to said rotary element,

said coupling having two coupling halves engaging into one another along a coupling axis, at least one tooth being arranged on one of said halves, at least a pair of radially spaced apart teeth being arranged on the other of said coupling halves and defining therebetween a recess having a radially set back bottom, said bottom and said one tooth being

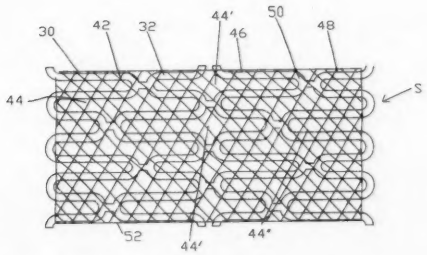
formed with first and second surfaces, respectively, said first and second surfaces extending angularly with respect to the coupling axis and complementary to one another as the recess receives the one tooth upon axial displacement of the halves relative each other and wherein each tooth is equipped in the circumferential direction with a bevel.

US 6,340,366 B2

STENT WITH NESTED OR OVERLAPPING RINGS

Bandula Wijay, 1903 Carriage Creek Dr., Friendswood, Tex. 77546

Filed Dec. 8, 1998, Appl. No. 207,867
Int. Cl. A61F *2/06*
U.S. Cl. 623—1.13 **8 Claims**



1. A stent, comprising:

a plurality of pairs of first and second rings, said first rings having an undulating form defining a first end and said second rings having an undulating form having a second end, said undulating form of said first rings defining said first end by alternating high and low peaks, and said undulating form of said second rings defining said second end by alternating high and low peaks;

said first and second ends are positioned facing each other with high peaks on said first end disposed in substantial longitudinal alignment with low peaks on said second end and low peaks on said first end disposed in substantial longitudinal alignment with high peaks on said second end, so as to allow said first and second rings to nest; and

at least one connector to connect adjacent rings.

US 6,340,367 B1

RADIOPAQUE MARKERS AND METHODS OF USING THE SAME

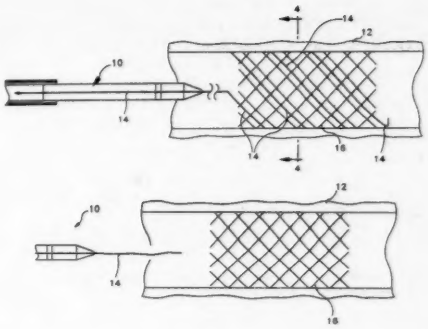
Jonathan S. Stinson, Plymouth, and Claude O. Clerc, Eden Prairie, both of Minn., assignors to Boston Scientific Scimed, Inc., Plymouth, Minn.

Filed Aug. 1, 1997, Appl. No. 905,821
This patent is subject to a terminal disclaimer.
Int. Cl. A61F *2/00*
U.S. Cl. 623—1.34 **57 Claims**

1. An implantable endoprosthesis and radiopaque marker system comprising:

an implantable endoprosthesis adapted to be disposed in a body lumen; and

at least one elongate marker having a proximal end, a distal end, a thickness, and at least one radiopaque portion, the radiopaque portion including a radiopaque material wherein the



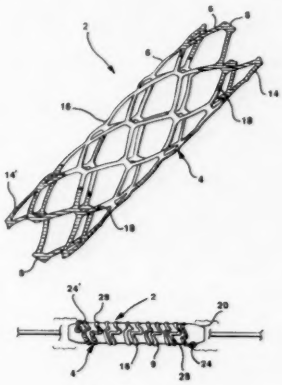
marker is removably attached to at least a portion of the implantable endoprosthesis and is removeable from the endoprosthesis when the endoprosthesis is in vivo.

US 6,340,368 B1

IMPLANTABLE DEVICE WITH RADIOPAQUE ENDS

Marcel A. E Verbeck, Heerlen, Netherlands, assignor to Medtronic Inc., Minneapolis, Minn.

Filed Oct. 23, 1998, Appl. No. 178,397
Int. Cl. A61F *2/00*
U.S. Cl. 623—1.34 **16 Claims**



1. An implantable medical device, comprising:

a radiolucent tubular structure having a first end and a second end, the tubular structure being expandable from an initial diameter to a second diameter; and

a tubular end structure being formed of a plurality of longitudinal elements and a plurality of horizontal connecting elements and having a first end and a second end, wherein the first end of the tubular end structure is connected to the first end of the radiolucent tubular structure, the tubular end structure being expandable from an initial diameter to a second diameter to provide a substantially uninterrupted passageway therethrough, wherein the tubular end structure consists of a radiopaque material viewable upon exposure to x-ray as a three dimensional structure.

US 6,340,369 B1

TREATING DEGENERATIVE DISC DISEASE WITH HARVESTED DISC CELLS AND ANALOGUES OF THE EXTRACELLULAR MATRIX

Bret A. Ferree, 1238 Cliff Laine Dr., Cincinnati, Ohio 45208

Provisional application No. 60/148,913, filed on Aug. 13, 1999. This application Aug. 14, 2000, Appl. No. 638,726.

Int. Cl. A61F *2/44*

U.S. Cl. 623—17.11 **35 Claims**

1. A method of treating a diseased or traumatized intervertebral disc having a nucleus and annulus fibrosis, comprising the steps of:

harvesting live, intervertebral disc cells;

combining the harvested cells with an analogue of the extracellular matrix to produce an engineered disc tissue; and

transplanting the engineered disc tissue into the disc.

US 6,340,370 B1

MODULAR SET OF AN OUTER SHELL FOR AN ARTIFICIAL HIP JOINT CUP

Hans-Georg Willert, Göttingen, Germany, and Kurt Bider, Winterthur, Switzerland, assignors to Sulzer Orthopedics Ltd., Baar, Switzerland

Filed Feb. 10, 2000, Appl. No. 507,488

Claims priority, application European Pat. Off., Mar. 10, 1999, 99810210

Int. Cl. A61F *2/34*

U.S. Cl. 623—22.38 **12 Claims**

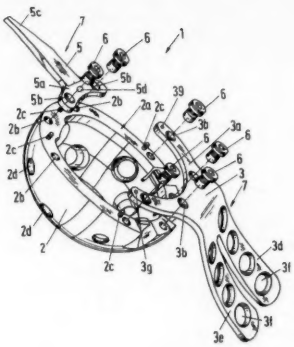
1. A modular set of an outer shell (**1**) for an artificial hip joint cup and anchoring parts (**7**), comprising:

an oval elongate hemispheric shell (**2**) having a larger hemispheric dimension at elongate ends in a preferred direction;

a frontal surface (**2***a*) defined in an equatorial plane of the oval elongate hemispheric shell (**2**);

threaded bores (**2***b*) provided in the frontal surface (**2***a*);

one or more screws (**6**) for engaging the threaded bores (**2***b*);



snap parts (**2***f*) arranged in corresponding recesses provided in the frontal surface (**2***a*), the snap parts (**2***f*) being placed proximate to one of the elongate ends of the oval elongate hemispheric shell (**2**);

one or more anchoring parts (**7**) which are selected from the group consisting of a lug (**3**, **4**), a spike (**5**) and a hook;

each anchoring part (**7**) having a securing part (**3***a*, **4***a*, **5***a*) designed to match the frontal surface (**2***a*);

bores (**3***b*, **4***b*, **5***b*) defined by the securing parts (**3***a*, **4***a*, **5***a*), the bores (**3***b*, **4***b*, **5***b*) corresponding to threaded bores (**2***b*) provided in the frontal surface (**2***a*) in such a manner that the securing part (**3***a*, **4***a*, **5***a*) can be secured at the oval elongate hemispheric shell (**2**) by means of the one or more screws (**6**) which engage in the bore (**2***b*); and,

at least one anchoring part (**7**) being designed and arranged in such a manner that its securing part (**3***a*, **4***a*, **5***a*) bridges the recesses and the corresponding snap parts (**2***f*).

US 6,340,371 B1

CATIONIC ORTHO-PHENYLENEDIAMINES, THEIR USE FOR THE OXIDATION DYEING OF KERATIN FIBERS, DYE COMPOSITIONS AND DYEING PROCESSES

Alain Genet, Aulnay sous Bois, and Alain Lagrange, Coupvray, both of France, assignors to L'Oreal S.A., Paris, France

Filed Sep. 1, 1999, Appl. No. 387,516

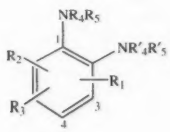
Claims priority, application France, Sep. 2, 1998, 98 10978

Int. Cl. A61K *7/13;* C07C *211/00;* C07D *233/00*

U.S. Cl. 8—406 31 Claims

1. A compound of formula (1) below or an acid addition salt thereof:

(I)



wherein:

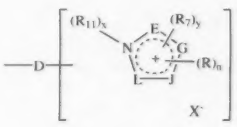
R^1, R^2 and R^3, which may be identical or different, are chosen from a hydrogen atom; halogen atoms; Z groups; (C_1–C_6)alkylcarbonyls; amino(C_1–C_6)alkyl-carbonyls; N—Z-amino(C_1–C_6)alkylcarbonyls; N—(C_1–C_6)alkylamino(C_1–C_6)alkyl-carbonyls; N,N-di(C_1–C_6)alkylamino(C_1–C_6)alkylcarbonyls; amino(C_1–C_6)alkylcarbonyl(C_1–C_6)alkyls; N—Z-amino(C_1–C_6)alkylcarbonyl-(C_1–C_6)alkyls; N—(C_1–C_6)alkylamino(C_1–C_6)alkylcarbonyl(C_1–C_6)alkyls; N,N-di(C_1–C_6)alkylamino(C_1–C_6)alkylcarbonyl(C_1–C_6)alkyls; carboxyl; (C_1–C_6)alkylcarboxyls; (C_1–C_6)alkylsulphonyls; aminosulphonyls; N—Z-aminosulphonyls; (C_1–C_6)N-alkylaminosulphonyls; N,N-di(C_1–C_6)alkylaminosulphonyls; (C_1–C_6)aminosulphonylalkyls; (C_1–C_6)N—Z-aminosulphonylalkyls; N—(C_1–C_6)alkylaminosulphonyl(C_1–C_6)alkyls; N,N-di(C_1–C_6)alkylaminosulphonyl(C_1–C_6)alkyls; carbamyl; N—(C_1–C_6)alkyl-carbamyls; N,N-di(C_1–C_6)alkylcarbamyls; carbamyl(C_1–C_6)alkyls; N—(C_1–C_6)alkylcarbamyl(C_1–C_6)alkyls; N,N-di(C_1–C_6)alkylcarbamyl(C_1–C_6)alkyls; (C_1–C_6)alkyls; (C_1–C_6)monohydroxyalkyls; (C_2–C_6)polyhydroxyalkyls; (C_1–C_6)alkoxy(C_1–C_6)-alkyls; (C_1–C_6)trifluoroalkyls; cyano; OR_6 and SR_6 groups; amino groups protected with a radical chosen from (C_1–C_6)alkylcarbonyls, (C_1–C_6)alkylcarboxyls, trifluoro(C_1–C_6)alkylcarbonyls, amino(C_1–C_6)alkylcarbonyls, N—Z-amino(C_1–C_6)alkylcarbonyls, N—(C_1–C_6)alkylamino(C_1–C_6)alkylcarbonyls, N,N-di(C_1–C_6)alkylamino(C_1–C_6)alkylcarbonyls, (C_1–C_6)alkylcarboxyls, carbamyl, N—(C_1–C_6)alkylcarbamyls, N,N-di(C_1–C_6)alkylcarbamyls, (C_1–C_6)alkylsulphonyls, aminosulphonyls, N—Z-aminosulphonyls, (C_1–C_6)N-alkylaminosulphonyls, N,N-di(C_1–C_6)alkylaminosulphonyls, thiocarbamyl, formyl, and Z groups, in which the linker arm D of the Z group comprises a ketone function directly attached to the nitrogen atom of the amino group; and (C_1–C_6)aminoalkyl in which the amine is substituted with at least one, identical or different radical, chosen from (C_1–C_6)alkyls, (C_1–C_6)monohydroxyalkyls, (C_2–C_6)polyhydroxyalkyls, (C_1–C_6)alkylcarbonyls, carbamyl, N—(C_1–C_6)alkyl-carbamyls, N,N-di(C_1–C_6)alkylcarbamyls, (C_1–C_6)alkylsulphonyls, formyl, trifluoro (C_1–C_6)alkyl-carbonyls, (C_1–C_6)alkylcarboxyls, thiocarbamyl, and Z groups;

R_6 is a radical chosen from (C_1–C_6)alkyls; (C_1–C_6)monohydroxyalkyls; (C_2–C_6)polyhydroxyalkyls; Z groups; (C_1–C_6)alkoxy(C_1–C_6)alkyls; aryls; benzyl; carboxy(C_1–C_6)alkyls; (C_1–C_6)alkylcarboxy(C_1–C_6)alkyls; cyano(C_1–C_6)alkyls; carbamyl(C_1–C_6)alkyls; N—(C_1–C_6)alkylcarbamyl(C_1–C_6)alkyls; N,N-di(C_1–C_6)alkylcarbamyl(C_1–C_6)alkyls; (C_1–C_6)trifluoroalkyls; (C_1–C_6)aminosulphonylalkyls; (C_1–C_6)N—Z-aminosulphonylalkyls; N—(C_1–C_6)alkylaminosulphonyl(C_1–C_6)alkyls; N,N-di(C_1–C_6)alkylaminosulphonyl(C_1–C_6)alkyls; (C_1–C_6)alkylsulphinyl(C_1–C_6)alkyls; (C_1–C_6)alkylsulphonyl(C_1–C_6)alkyls; (C_1–C_6)alkylcarbonyl(C_1–C_6)alkyls; (C_1–C_6)aminoalkyls; (C_1–C_6)aminoalkyls in which the amine is substituted with one or two, identical or different, radicals chosen from (C_1–C_6)alkyls, (C_1–C_6)monohydroxyalkyls, (C_2–C_6)polyhydroxyalkyls, (C_1–C_6)alkylcarbonyls, formyl, trifluoro-(C_1–C_6)alkylcarbonyls, (C_1–C_6)alkylcarboxyls, carbamyl, N—(C_1–C_6)alkylcarbamyls, N,N-di-(C_1–C_6)alkylcarbamyls, thiocarbamyl and (C_1–C_6)alkylsulphonyls, and Z groups;

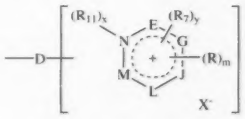
R_4, R'_4, R_5 and R'_5, which may be identical or different, are substituents chosen from a hydrogen atom; Z groups; (C_1–C_6)alkyls; (C_1–C_6)monohydroxyalkyls; (C_2–C_6)polyhydroxyalkyls; (C_1–C_6)alkoxy(C_1–C_6)alkyls; aryls; benzyl; cyano(C_1–C_6)alkyls; carbamyl(C_1–C_6)alkyls; N—(C_1–C_6)alkylcarbamyl(C_1–C_6)alkyls; N,N-di(C_1–C_6)alkylcarbamyl(C_1–C_6)alkyls; thiocarbamyl(C_1–C_6)alkyls; (C_1–C_6)trifluoroalkyls; (C_1–C_6)sulphoalkyls; (C_1–C_6)alkylcarboxy(C_1–C_6)alkyls; (C_1–C_6)alkylsulphinyl(C_1–C_6)alkyls; (C_1–C_6)aminosulphonylalkyls; (C_1–C_6)N—Z-aminosulphonylalkyls; N—(C_1–C_6)alkylaminosulphonyl(C_1–C_6)alkyls; N,N-di(C_1–C_6)alkylaminosulphonyl(C_1–C_6)alkyls; (C_1–C_6)alkylcarbonyl(C_1–C_6)alkyls; (C_1–C_6)aminoalkyls; (C_1–C_6)aminoalkyls in which the amine is substituted with one or two, identical or different, radicals chosen from (C_1–C_6)alkyls, (C_1–C_6)monohydroxyalkyls, (C_2–C_6)polyhydroxyalkyls, (C_1–C_6)alkylcarbonyls, carbamyl, N—(C_1–C_6)alkylcarbamyls, N,N-di(C_1–C_6)alkylcarbamyls, (C_1–C_6)alkylsulphonyls, formyl, trifluoro(C_1–C_6)alkylcarbonyls, (C_1–C_6)alkylcarboxyls, thiocarbamyl, and Z groups;

Z is chosen from unsaturated cationic groups of formulae (II) and (III) below, and the saturated cationic groups of formula (IV) below:

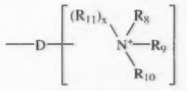
(II)



(III)



(IV)



in which:

D is a linker arm chosen from linear and branched alkyl chains, optionally interrupted by at least one hetero atom, such as oxygen, sulphur, and nitrogen atoms, and optionally substituted with at least one radical chosen from a hydroxyl group and (C_1–C_6)alkoxys, and which can optionally bear at least one ketone function;

the ring members E, G, J, L and M, which may be identical or different, are chosen from carbon, oxygen, sulphur, and nitrogen atoms;

n is chosen from the integers 0, 1, 2, 3, and 4;

m is chosen from the integers 0, 1, 2, 3, 4, and 5;

the radicals R, which may be identical or different, are chosen from a second group Z which is identical to or different from the first group Z, a halogen atom, a hydroxyl, (C_1–C_6)alkyls, (C_1–C_6)monohydroxyalkyls, (C_2–C_6)polyhydroxyalkyls, a nitro, a cyano, cyano(C_1–C_6)alkyls, (C_1–C_6)alkoxys, tri(C_1–C_6)alkylsilane(C_1–C_6)alkyls, amido, aldehydo, carboxyl, (C_1–C_6)alkylcarbonyls, thio, (C_1–C_6)thioalkyls, (C_1–C_6)alkylthios, amino, aminos protected with a radical chosen from (C_1–C_6)alkylcarbonyls, carbamyls and (C_1–C_6)alkylsulphonyls; NHR" groups, NR"R"' groups in which R" and R"', which may be identical or different, are chosen from (C_1–C_6)alkyl radicals, (C_1–C_6)monohydroxyalkyl radicals, and (C_2–C_6)polyhydroxyalkyl radicals;

R_7 is a radical chosen from (C_1–C_6)alkyls, (C_1–C_6)monohydroxyalkyls, (C_2–C_6)polyhydroxyalkyls, cyano(C_1–C_6)alkyls, tri(C_1–C_6)alkylsilane(C_1–C_6)alkyls, (C_1–C_6)alkoxy(C_1–C_6)alkyls, carbamyl-(C_1–C_6)alkyls, (C_1–C_6)alkylcarboxy(C_1–C_6)alkyls, benzyl and a second group Z which is identical to or different from the first group Z;

R_8, R_9 and R_{10}, which may be identical or different, are radicals chosen from (C_1–C_6)alkyls, (C_1–C_6)monohydroxyalkyls, (C_2–C_6)polyhydroxyalkyls, (C_1–C_6)alkoxy(C_1–C_6)alkyls, cyano(C_1–C_6)alkyls, aryls, benzyl, (C_1–C_6)amidoalkyls, tri(C_1–C_6)alkylsilane(C_1–C_6)alkyls, and (C_1–C_6)aminoalkyls in which the amine is protected with a radical chosen from (C_1–C_6)alkylcarbonyls, carbamyl, and (C_1–C_6)alkylsulphonyls; two of the radicals R_8, R_9 and R_{10} can together also form, with the nitrogen atom to which they are attached, a saturated 5- or 6-membered ring or a ring containing at least one additional hetero atom, the ring being optionally substituted with a substituent chosen from halogen atoms, a hydroxyl group, (C_1–C_6)alkyls, (C_1–C_6)monohydroxyalkyls, (C_2–C_6)polyhydroxyalkyls, a nitro, a cyano, cyano(C_1–C_6)alkyls, (C_1–C_6)alkoxys, tri(C_1–C_6)alkylsilane(C_1–C_6)alkyls, amido, aldehydo, carboxyl, keto(C_1–C_6)alkyls, thio, (C_1–C_6)thioalkyls, (C_1–C_6)alkylthios, amino, and aminos protected with a radical chosen from (C_1–C_6)alkylcarbonyls, carbamyl, and (C_1–C_6)alkylsulphonyls; one of the radicals R_8, R_9 and R_{10} can also be chosen from a second group Z which is identical to or different from the first group Z;

R_{11} is a radical chosen from (C_1–C_6)alkyls; (C_1–C_6)monohydroxyalkyls; (C_2–C_6)polyhydroxyalkyls; aryls; benzyl; (C_1–C_6)aminoalkyls, (C_1–C_6)aminoalkyls in which the amine is protected with a radical chosen from (C_1–C_6)alkylcarbonyls, carbamyl, and (C_1–C_6)alkylsulphonyls; carboxy(C_1–C_6)alkyls; cyano(C_1–C_6)alkyls; carbamyl(C_1–C_6)alkyls; (C_1–C_6)trifluoroalkyls; tri(C_1–C_6)alkylsilane(C_1–C_6)alkyls; (C_1–C_6)sulphonamidoalkyls; (C_1–C_6)alkylcarboxy(C_1–C_6)alkyls; (C_1–C_6)alkylsulphinyl(C_1–C_6)alkyls; (C_1–C_6)alkylsulphonyl(C_1–C_6)alkyls; (C_1–C_6)alkylketo(C_1–C_6)alkyls; N—(C_1–C_6)alkylcarbamyl(C_1–C_6)alkyls; N—(C_1–C_6)alkylsulphonamido(C_1–C_6)alkyls;

x and y are integers chosen from 0 and 1; with the provision that:

in the unsaturated cationic groups of formula (II):

when x=0, the linker arm D is attached to the nitrogen atom,

when x=1, the linker arm D is attached to one of the ring members E, G, J or L,

y can take the value 1 only:

1) when the ring members E, G, J and L simultaneously represent a carbon atom and when the radical R_7 is borne by the nitrogen atom of the unsaturated ring; or alternatively

2) when at least one of the ring members E, G, J and L represents a nitrogen atom to which the radical R_7 is attached;

in the unsaturated cationic groups of formula (III):

when x=0, the linker arm D is attached to the nitrogen atom,

when x=1, the linker arm D is attached to one of the ring members E, G, J, L or M,

y can take the value 1 only when at least one of the ring members E, G, J, L and M is chosen from divalent atoms and when the radical R_7 is borne by the nitrogen atom of the unsaturated ring;

in the cationic groups of formula (IV):

when x=0, then the linker arm is attached to the nitrogen atom bearing the radicals R_8 to R_{10},

when x=1, then two of the radicals R_8 to R_{10} form, together with the nitrogen atom to which they are attached, a saturated 5- or 6-membered ring as defined above, and the linker arm D is borne by a carbon atom of the saturated ring;

X^- is chosen from monovalent and divalent anions;

it being understood that:

the number of unsaturated cationic groups Z of formula (II) or (III) is at least equal to 1;

when at least one of R_4, R_5, R'_4, and R'_5, is chosen from Z groups in which the linker arm D represents an alkyl chain comprising a ketone function, then the ketone function is not directly attached to the nitrogen atom of the group —NR_4R_5 or —$NR'_4R'_5$.

US 6,340,372 B1

COMPOSITIONS FOR DYEING KERATIN FIBERS CONTAINING S-OXIDE-THIAZOLO-AZOLES AND/OR S,S-DIOXIDE-THIAZOLO-AZOLES; THEIR USE FOR DYEING AS COUPLERS, METHOD OF DYEING

Laurent Vidal, Paris, and Gérard Malle, Villiers-sur-Morin, both of France, assignors to L'Oreal S.A., Paris, France

PCT No. PCT/FR97/01520, § 371 Date Feb. 26, 1999, § 102(e) Date Feb. 26, 1999, PCT Pub. No. WO98/08485, PCT Pub. Date Mar. 5, 1998

PCT Filed Aug. 22, 1997, Appl. No. 242,933

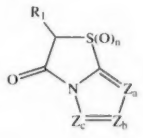
Claims priority, application France, Aug. 26, 1996, 96 10449

Int. Cl. A61K *7/13*

U.S. Cl. 8—409 **33 Claims**

1. A composition for oxidation dyeing of keratinous fibres comprising, in a medium appropriate for dyeing keratinous fibres:

at least one ingredient selected from thiazoloazole S-oxides and thiazoloazole S,S-dioxides of formula (I) and acid addition salts thereof:



(I)

wherein:

R_1 represents: a hydrogen atom; a halogen atom; an alkoxy group; an aryloxy group; an acyloxy group; an arylthio group; an alkylthio group; a heteroarylthio group; a heteroaryloxy group; a thiocyano group; an alkyloxythiocarbonylthio group; a sulphonamido group; a pentafluorobutanamido group; a 2,3,4,5,6-pentafluorobenzamido group; a pyrazolyl group; an imidazolyl group; a triazolyl group; a tetrazolyl group; a benzimidazolyl group; a 1-benzyl-5-ethoxy-3-hydantoinyl group; a 1-benzyl-3-hydantoinyl group; a 5,5-dimethyl-2,4-dioxo-3-oxazolidinyl group; a 2-oxo-1,2-dihydro-1-pyridinyl group; an alkylamido group; an arylamido group; an $NR'''R^{IV}$ group wherein R''' and R^{IV} are identical or different and represent a C_1–C_4 alkyl group

or a C_1–C_4 hydroxyalkyo group; a carboxyl group; an alkoxycarbonyl group; an alkyloxycarbonylamino group; an aryloxycarbonylamino group; a sulphonyloxy group; an alkoxycarbonyloxy group; or an aryloxycarbonyloxy group;

Z_a, Z_b and Z_c represent, independently of one another, a nitrogen atom or a carbon atom carrying an R_2, R_3 or R_4 group, with the proviso that:

when Z_a denotes a carbon atom carrying an R_2 group, the Z_b represents a nitrogen atom and Z_c denotes a carbon atom carrying an R_3 group; or

when Z_a denotes a nitrogen atom, then Z_b represents a carbon atom carrying an R_4 group and Z_c denotes a nitrogen atom;

R_2, R_3 and R_4 represent, independently of one another: a hydrogen atom; a linear or branched C_1–C_{20} alkyl group unsubstituted or substituted by one or two R groups, wherein said R is a halogen atom, a nitro, a cyano, a hydroxyl, an alkoxy, an aryloxy, an amino, an alkylamino, an acylamino, a carbamoyl, a sulphonamido, a sulphamoyl, an imido, an alkylthio, an arylthio, an aryl, an alkoxycarbonyl, or an acyl group; an aryl group unsubstituted or substituted by one or two R groups, wherein said R is a halogen atom, a nitro, a cyano, a hydroxyl, an alkoxy, an aryloxy, an amino, an alkylamino, an acylamino, a carbamoyl, a sulphonamido, a sulphamoyl, an imido, an alkylthio, an arylthio, an aryl, an alkoxycarbonyl, or an acyl group; a halogen atom; an acyl group; a sulphonyl group; a sulphinyl group; a phosphonyl group; a carbamoyl group; a sulphamoyl group; a cyano group; an amino group; an alkylamino group; an arylamino group; an acylamino group; an alkylthio group; an arylthio group; an acyloxy group; a carbamoyloxy group; a sulphonamido group; an imido group; a ureido group; a sulphamoylamino group; an alkoxycarbonylamino group; an aryloxycarbonylamino group; an alkoxycarbonyl group; an aryloxycarbonyl group; a carboxyl group; a nitro group; a sulphonyl group; a hydroxyl group; a mercapto group; or a trifluoromethyl group;

n is 1 or 2;

and at least one oxidation base.

US 6,340,373 B1

PROCESS FOR RECOVERING AND TREATING OF AQUEOUS SOLUTIONS

Per H. Billington, Slependen, Norway, assignor to Kvaerner Process Systems A.S., Billingstadt, Norway

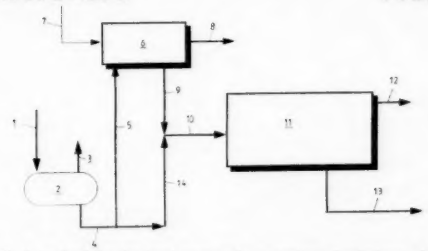
PCT No. PCT/NO98/00072, § 371 Date Aug. 27, 1999, § 102(e) Date Aug. 27, 1999, PCT Pub. No. WO98/39076, PCT Pub. Date Sep. 11, 1998

PCT Filed Mar. 5, 1998, Appl. No. 380,389

Claims priority, application Norway, Mar. 5, 1997, 971004

Int. Cl. B01D *9/02*

U.S. Cl. 23—295 R **6 Claims**



1. A method for the treatment and processing of solutions of an organic fluid, water, and at least one member selected from the group consisting of alkaline earth metals, alkali metals, metal ions, and mixtures thereof, which comprises the following steps:

(a) conducting a stream (**5**) consisting of organic fluid, water, and at least one member selected from the group consisting of alkaline earth metals, alkali metals, metal ions, and mixtures thereof, to a salt reduction and crystallization unit (**6**);

(b) flash evaporating and optionally partially condensing the stream (**5**) and providing thereby a stream (**9**, **10**) of evaporated water and organic solvent and a stream (**8**) of organic fluid and at least one member selected from the group consisting of alkaline earth metals, alkali metals, metal ions, and mixtures thereof;

(c) conducting the stream (**8**) to a salt reduction unit;

(d) nucleating crystals via at least one member selected from the group consisting of alkaline earth metals, alkali metals, metal ions, and mixtures thereof, by means of depressurization and temperature increase; and

(e) removing the portion of the precipitated crystals and/or particles from the organic fluid.

US 6,340,374 B1

POLISHING SLURRY AND POLISHING METHOD

Hiroshi Kato; Naoto Mochizuki, both of Tokuyama, and Hiroyuki Kono, Shiki, all of Japan, assignors to Tokuyama Corporation, Yamaguchi-ken, Japan

Filed Mar. 27, 2000, Appl. No. 536,316

Claims priority, application Japan, Mar. 13, 1999, 11-093070

Int. Cl. C09K *3/14;* **C09G** *1/02*

U.S. Cl. 51—308 **16 Claims**

1. A polishing slurry comprising water, fumed silica and spherical silica having an average primary particle size of 40 to 600 nm excluding the fumed silica.

US 6,340,375 B1

AIR CLEANER; METHOD AND USE

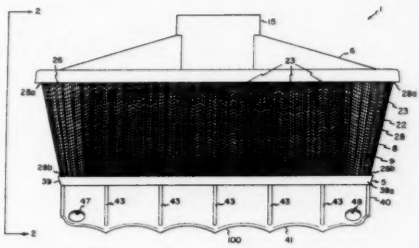
Rocco A. DePietro, III, Eden Prairie; Steven A. Carter, Eagan, and James K. Elfstrand, Mounds View, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of application No. 09/146,450, filed on Sep. 3, 1998, now Pat. No. 6,059,851. This application May 8, 2000, Appl. No. 566,479.

This patent is subject to a terminal disclaimer.

Int. Cl. B01D *46/00*

U.S. Cl. 55—385.3 **17 Claims**



1. An air cleaner comprising:

(a) a no-housing construction including: a media pack; a first closed end cap; and a second open end cap;

(i) said media pack defining a wedge shaped extension of media having an oval outer perimeter;

(ii) said media pack extending between said first and second end caps;

(iii) said first end cap having a length to width ratio of at least 3;

(iv) said second end cap having a length to width ratio of at least 2; and

(v) said first end cap having an angled mounting flange thereon.

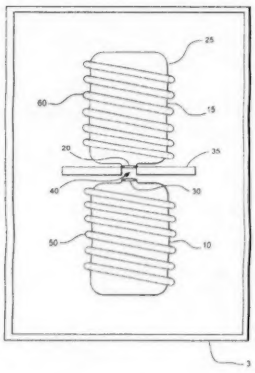
US 6,340,376 B1
METHOD FOR COMBINING METALS WITH DIFFERENT MELTING POINTS

Krishna Sapru; Subramanian Ramachandran, and Lu Ming, all of Troy, Mich., assignors to Energy Conversion Devices, Inc., Rochester Hills, Mich.

Continuation-in-part of application No. 09/024,098, filed on Feb. 17, 1998, now abandoned. This application Dec. 27, 1999, Appl. No. 472,289.

Int. Cl. C22C *1/02;* **C22B** *9/05*

U.S. Cl. 75—10.14 **8 Claims**



1. A method for combining a first metal with a second metal, said method comprising the steps of:

providing said first metal and said second metal, the melting point of said second metal being greater than the melting point of said first metal;

melting said first metal in a first melting crucible to form a first molten metal;

melting said second metal in a second melting crucible to form a second molten metal; and

introducing said second molten metal onto or into said first molten metal in said first melting crucible.

US 6,340,377 B1
HIGH-TEMPERATURE WEAR-RESISTANT SINTERED ALLOY

Hideaki Kawata; Kei Ishii; Koichiro Hayashi; Yoshimasa Aoki, all of Chiba; Atsushi Ehira, Kanagawa; Kunio Maki, and Masaki Toriumi, both of Yokohama, all of Japan, assignors to Hitachi Powdered Metals Co., Ltd., Chiba, and Nissan Motor Co., Ltd., Kanagawa, both of Japan

Filed Apr. 11, 2000, Appl. No. 547,340

Claims priority, application Japan, Apr. 12, 1999, 11-104435

Int. Cl. C22C *33/00*

U.S. Cl. 75—236 **12 Claims**

1. A high-temperature wear-resistant sintered alloy comprising, based on a total weight of said sintered alloy, 3.74–13.36 wt % of W, 0.39–5.58 wt % of V, 0.2–5.78 wt % of Cr, 0.1–0.6 wt % of Si, 0.39–1.99 wt % of Mn, 0.21–1.18 wt % of S, up to 2.16 wt % of C, and a balance consisting of Fe and inevitable impurity, said sintered alloy including:

a first phase comprising, based on a total weight of said first phase, 3–7 wt % of W, up to 1 wt % of Cr, 0.1–0.6 wt % of Si, 0.2–1 wt % of Mn, 0.1–0.6 wt % of S, up to 2.2 wt % of C, and a balance consisting of Fe and inevitable impurity; and

a second phase comprising, based on a total weight of said second phase, 7–15 wt % of W, 2–7 wt % of V, 1–7 wt % of Cr, 0.1–0.6 wt % of Si, 0.2–1 wt % of Mn, 0.1–0.6 wt % of S, up to 2.2 wt % of C, and a balance consisting of Fe and inevitable impurity,

wherein 0.3–1.6 wt % of first MnS grains, based on the total weight of said first phase, and first carbides of at least tungsten are dispersed in said first phase, said first carbides having fine particles,

wherein 0.3–1.6 wt % of second MnS grains, based on the total weight of said second phase, and second carbides of at least tungsten are dispersed in said second phase, and said second carbides include tungsten carbides having a particle diameter of at least 1 μm and being in an amount of 10–20 areal %, based on a total area of said second phase,

wherein said first phases are in an amount of from 20 to 80 wt %, based on a total weight of said first and second phases,

wherein said first and second phases are distributed in said sintered alloy, in a form of spots,

wherein 0.3–1.6 wt % of third MnS grains, based on the total weight of said sintered alloy, are dispersed in boundaries surrounding grains of said first and second phases and/or in pores of said sintered alloy.

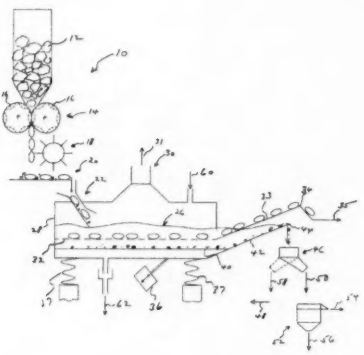
US 6,340,378 B1
METHOD FOR SCREENING HOT BRIQUETTED DIRECT REDUCED IRON

Jan D. Hinrichsen, Pittsburgh, Pa., assignor to Kvaerner Metals, Pittsburgh, Pa.

Filed Aug. 25, 1999, Appl. No. 382,878

Int. Cl. C22B *1/24;* **C21B** *13/00;* **B07B** *13/05*

U.S. Cl. 75—436 **12 Claims**



1. In a process for hot briquetting of direct reduced iron, a method for separating briquettes and fragments of a product stream resulting from the process, comprising

providing a cooling bath with submerged separating means disposed and sized so as to retain the briquettes and pass the fragments,

quenching the product stream of briquettes and fragments in the cooling bath, then:

retaining the quench cooled briquettes on the separating means,

passing the quench cooled fragments through the separating means,

removing the retained quench cooled briquettes from the bath, and

removing the passed quench cooled fragments from the bath separately from the quench cooled briquettes.

US 6,340,379 B1

GAS FILTER, METHOD FOR PRODUCING A GAS FILTER AND USE OF SAID GAS FILTER

Bernd Penth, Lebach; Gerhard Hoerpel, Nottuln, and Christian Hying, Rhede, all of Germany, assignors to Creavis Gesellschaft fuer Technologie und Innovation mBH, Marl, Germany

PCT No. PCT/EP98/05946, § 371 Date Jul. 26, 1999, § 102(e) Date Jul. 26, 1999, PCT Pub. No. WO99/15257, PCT Pub. Date Apr. 1, 1999

PCT Filed Sep. 18, 1998, Appl. No. 308,222

Claims priority, application Germany, Sep. 20, 1997, 197 41 498; Mar. 18, 1998, 198 11 708; Mar. 19, 1998, 198 12 035; May 8, 1998, 198 20 580; Jun. 3, 1998, 198 24 666

This patent is subject to a terminal disclaimer.

Int. Cl. B01D *59/12;71/02;71/04*

U.S. Cl. 95—45 **96 Claims**

1. A regenerable gas filter for filtering gases which comprises a bendable and rollable composite material based on at least one open-structured and material-permeable support and having on at least one side of the support and in the interior of the support at least one inorganic component consisting essentially of at least one compound of a metal, a semimetal or a mixed metal and at least one element of main groups III to VII, wherein the composite material has a thickness of 5 to 150 μm and can be bent to a radius of down to 2 mm and wherein the composite material has pores permeable to particles having maximum size of from 0.1 to 10 μm and wherein there is present in the composite material at least one inorganic component as a particle size fraction having a particle size of 1 to 250 nm.

US 6,340,380 B1

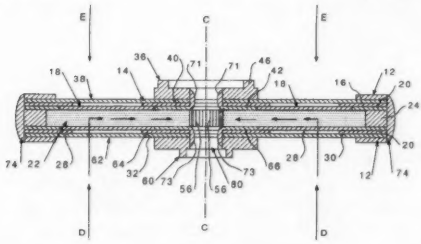
FLUID SEPARATION ASSEMBLY

Chester B. Frost, Corvallis, and Brett R. Krueger, Lebanon, both of Oreg., assignors to ATI Properties, Inc., Albany, Oreg.

Filed Oct. 21, 1999, Appl. No. 422,505

Int. Cl. B01D *53/22*

U.S. Cl. 95—56 **37 Claims**



1. A fluid separation assembly comprising:

a. a permeate plate having a first surface, a second surface, a fluid outlet and fluid passageways extending from said first surface and said second surface to said fluid outlet;

b. first and second wire mesh membrane supports adjacent said first surface and said second surface of said permeate plate, respectively, each of said first and second wire mesh membrane supports comprising a wire mesh having a coating that is an intermetallic diffusion bonding barrier and having an opening aligned with said fluid outlet of said permeate plate; and

c. first and second fluid permeable membranes, said first fluid permeable membrane adjacent a surface of said first wire mesh membrane support opposite said permeate plate, said second fluid permeable membrane adjacent a surface of said second wire mesh membrane opposite said permeate plate, each of said first and second permeable membranes having an opening aligned with said fluid outlet.

16. A method for separating a desired fluid from a fluid mixture, comprising:

providing a fluid separation assembly as recited in claim **1**; and

contacting the fluid permeable membranes of the fluid separation assembly with the fluid mixture.

US 6,340,381 B1

METHOD AND APPARATUS FOR THE PREPARATION OF CLEAN GASES

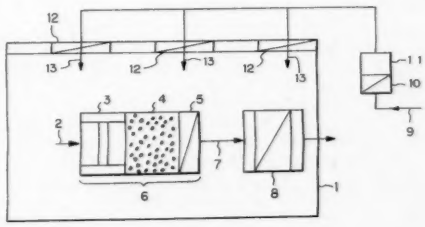
Toshiaki Fujii; Tsukuru Suzuki; Hidetomo Suzuki, all of Kanagawa-ken, and Kazuhiko Sakamoto, Saitama-ken, all of Japan, assignors to Ebara Research Co., Ltd., Fujisawa, Japan

Continuation of application No. 08/424,545, filed as application No. PCT/JP92/01579, filed on Dec. 2, 1992. This application Jul. 20, 2000, Appl. No. 620,247.

Claims priority, application Japan, Dec. 2, 1991, 3-341802; Jun. 16, 1992, 4-180538

Int. Cl. B01D *53/04*

U.S. Cl. 95—63 **29 Claims**



1. A method for preventing contamination of a substrate or substrate surface, said method comprising the following in sequence:

passing a gas containing non-methane hydrocarbons through an adsorber and/or absorber for decreasing concentrations of non-methane hydrocarbons therein;

passing the gas through a first filter for removing fine particles therein; and

bringing the gas into contact with a substrate or substrate surface to prevent contamination of the substrate.

US 6,340,382 B1

PRESSURE SWING ADSORPTION PROCESS FOR THE PRODUCTION OF HYDROGEN

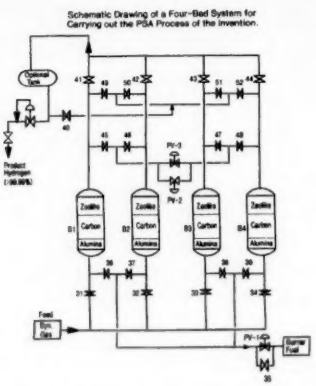
Mohamed Safdar Allie Baksh, 2635 Sweet Home Rd., Amherst, N.Y. 14228, and Mark William Ackley, 96 Church St., East Aurora, N.Y. 14052

Filed Aug. 13, 1999, Appl. No. 373,749

Int. Cl. B01D *53/047;53/26*

U.S. Cl. 95—96 **12 Claims**

1. A pressure swing adsorption (PSA) process for purifying a feed stream containing at least one of H_2O, N_2, CO_2, CH_4 and CO, and more than 50 mole % hydrogen, which comprises passing the feed stream at a pressure above atmospheric pressure through a multilayer adsorbent bed, wherein at least one of said H_2O, CO_2, CH_4 and CO is adsorbed from the gas stream prior to passing the stream through a layer of a synthetic zeolite adsorbent having a SiO_2/Al_2O_3 ratio within the range of 2.0–2.5 and selected from the group consisting of CaX, LiX and VSA6 adsorbent to adsorb substantially all of the nitrogen in such stream and recovering



purified (>99.9%) hydrogen as product from the multilayer adsorbent bed.

US 6,340,383 B1

FILTER HAVING A CLEANING NOZZLE

Arne Grønbæk Jensen, St. Fuglede, and Keld Christensen, Ruds Vedby, both of Denmark, assignors to Simatek A/S, Herslev S, Denmark

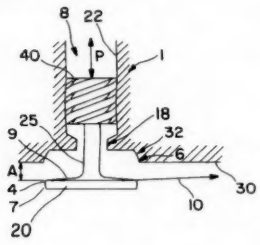
PCT No. PCT/DK98/00483, § 371 Date May 4, 2000, § 102(e) Date May 4, 2000, PCT Pub. No. WO99/24146, PCT Pub. Date May 20, 1999

PCT Filed Nov. 10, 1998, Appl. No. 530,753

Claims priority, application Denmark, Nov. 10, 1997, 97/423

Int. Cl. B01D *46/04*

U.S. Cl. 96—233 **15 Claims**



1. A filter for filtering a particle-containing medium and of the type comprising a chamber having:

a first section and a second section,

a substantially horizontal extending partition plate which separates the two sections,

said partition plate carrying a plurality of filter devices through which the medium to be filtered passes from the first section to the second section, and

a plurality of nozzles connected with a source of a pressurized cleaning fluid and adapted to generate a flow of the cleaning fluid directed toward the partition plate and/or the filter devices,

each of said nozzles comprising a housing having

an inlet opening and an outlet opening for the cleaning fluid, said openings forming between them a passage defined by a wall,

a valve body having a valve head and a valve rod,

said valve rod being arranged to be moved in the interior of the passage between a first end position and a second end position,

said outlet opening forming a valve seat adapted to cooperate with the valve head in the first position to prevent outflow of the cleaning fluid,

means for generating a bias of the valve body in a direction toward the first end position,

the valve body also comprises a piston device acting as a hydraulic piston, said piston device being arranged between the inlet opening and the outlet opening and adapted to generate a pressure loss in the cleaning fluid during its flow from the inlet opening and through the passage whereby the valve body is moved in a direction toward the second end position to allow outflow of the cleaning fluid through the outlet opening, a first face facing the inlet opening and a second face arranged so as to face the outlet opening, and a cylinder face adapted to be engaged with the wall of the passage in liquid-tight relationship, said piston device comprises at least one channel for the cleaning fluid, said channel extending from the first to the second face, and

the valve head having an upper surface arranged for reflecting the cleaning liquid passing through at least one channel in the piston device to control the flow of the cleaning fluid toward the partition plate and/or the filter devices.

US 6,340,384 B1

COPPER/AMINE OXIDE WOOD PRESERVATIVES

Leigh Walker, Macungie, Pa., assignor to Lonza Inc., Fair Lawn, N.J.

Provisional application No. 60/135,539, filed on May 24, 1999. This application May 24, 2000, Appl. No. 577,331.

Int. Cl. A01N *33/02;59/20*

U.S. Cl. 106—18.32 **26 Claims**

1. A composition comprising:

(a) a preservative enhancing or waterproofing effective amount of one or more amine oxides, and

(b) a biocidally effective amount of one or more aqueous copper amine complexes,

wherein the composition is substantially free of chlorides.

US 6,340,385 B1

CLAY-CONTAINING MIXTURE OF DRY SOLIDS TO BE USED IN FORMING A MOISTURE RESISTANT GEL AND METHOD FOR TREATING A SURFACE

Jacobus Cornelis Wammes, Velddriel, Netherlands, assignor to Trisoplast International B.V., Netherlands

PCT No. PCT/NL98/00500, § 371 Date Mar. 3, 2000, § 102(e) Date Mar. 3, 2000, PCT Pub. No. WO99/11732, PCT Pub. Date Mar. 11, 1999

PCT Filed Sep. 2, 1998, Appl. No. 486,957

Claims priority, application Netherlands, Sep. 4, 1997, 1006935

Int. Cl. C09K *17/00;17/40;17/42*

U.S. Cl. 106—287.17 **14 Claims**

1. A clay-containing mixture of dry solids to be used in forming a moisture-resistant gel, comprising powdery or ground smectite, more than 0.2% by weight of a water-soluble polymer, and more than 0.5% by weight of one or more solid inert fillers, wherein all weight percentages are based on the amount of smectite in the mixture, wherein at least 10% by weight of said inert filler is made up of a hydrophobic filler, based on the total amount of filler, wherein the amount of smectite in the mixture is 10%–30% by weight, and wherein the water-soluble polymer has a molecular weight of at least 1 million.

US 6,340,386 B1

MOCVD OF SBT USING TOLUENE BASED SOLVENT SYSTEM FOR PRECURSOR DELIVERY

Bryan C. Hendrix, Danbury; Thomas H. Baum, New Fairfield; Debra Desrochers Christos, and Jeffrey F. Roeder, both of Brookfield, all of Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.

Continuation-in-part of application No. 09/224,614, filed on Dec. 31, 1998, now Pat. No. 6,111,124. This application Nov. 15, 1999, Appl. No. 440,235.

Int. Cl. C09K *3/00*

U.S. Cl. 106—287.18 **22 Claims**

1. A precursor composition useful for liquid delivery MOCVD, comprising (i) a solvent composition including toluene and a Lewis base, wherein toluene is present at a concentration of from about 75% to about 98% by volume, based on the total volume of toluene and the Lewis base, and (ii) a precursor species dissolved or suspended in the solvent composition, wherein the precursor species comprises a precursor selected from the group consisting of: a precursor for bismuth, a precursor for tantalum, and a precursor for niobium.

US 6,340,387 B1

ORGANICALLY POST-TREATED PIGMENTS AND METHODS FOR THEIR PRODUCTION

Jürgen Orth-Gerber, Alte Wipperfürther Strasse 81, 51519 Odenthal; Lothar Elfenthal, Zum Bräuhaus 40, D-40764 Laugenfeld, and Siegfried Blümel, Ander Deckersweide 24, D-40883 Ratinger, all of Germany

Filed Feb. 29, 2000, Appl. No. 515,570

Claims priority, application Germany, Mar. 10, 1999, 199 10 521

Int. Cl. C09C *3/04*

U.S. Cl. 106—447 **11 Claims**

1. In a process for preparing pigment particles for use in water-thinable coatings media, wherein a pigment base is ground in a jet mill in the presence of an organic grinding aid and producing ground pigment particles having a first organic surface coating comprising residue of the organic grinding aid, the improvement comprising:

applying to the ground pigment particles from about 0.1 to 1.5 wt. %, based upon weight of the ground pigment particles, of an amphiphilic organic compound having a hydrophilic-lipophilic balance value in the range of about 10 to 18 for depositing a second organic surface coating overlaying the first organic surface coating on the ground pigment particles.

US 6,340,388 B1

STRENGTHENED, LIGHT WEIGHT WALLBOARD AND METHOD AND APPARATUS FOR MAKING THE SAME

Joseph S. Luongo, Kingman, Ariz., assignor to Advanced Construction Materials Corp., Kingman, Ariz.

Continuation-in-part of application No. 09/471,448, filed on Dec. 23, 1999, which is a continuation-in-part of application No. 09/374,589, filed on Aug. 13, 1999, now Pat. No. 6,251,979, which is a continuation-in-part of application No. 09/195,438, filed on Nov. 18, 1998, now abandoned, Provisional application No. 60/139,618, filed on Jun. 17, 1999. This application Apr. 12, 2000, Appl. No. 547,615.

This patent is subject to a terminal disclaimer.

Int. Cl. C04B *38/08;28/14*

U.S. Cl. 106—675 **16 Claims**

1. A slurry composition suitable for use in the manufacture of construction grade wallboard comprising:

expanded perlite present at about 0.5% up to about 47.5% by weight of the total wet weight of the slurry;

calcium sulfate;

a vinyl acetate emulsion comprising a homogeneous blend of suspended polyvinyl acetate particles in polyvinyl alcohol and water; and

a solution comprising a 10% to 25% solution of polyvinyl alcohol to water, said solution being present in said composition in an amount of approximately 0.1% to about 30% of said vinyl acetate emulsion.

US 6,340,389 B1

FIRE DOOR CORE

Donald F. Klus, Tigard, Oreg., assignor to G-P Gypsum Corporation, Atlanta, Ga.

Filed Dec. 18, 2000, Appl. No. 738,776

Int. Cl. C04B *14/18;14/12;38/08;* **E04B** *5/16*

U.S. Cl. 106—675 **20 Claims**

1. A fire door core consisting essentially of:

(a) expanded perlite,

(b) a fireproof binder,

(c) fire clay or vermiculite

and less than about 8 weight percent gypsum, based on the weight of the fire door core, such that gypsum is not a main structural component of said fire door core.

US 6,340,390 B1

METHOD FOR MANUFACTURING SILICON SINGLE CRYSTAL

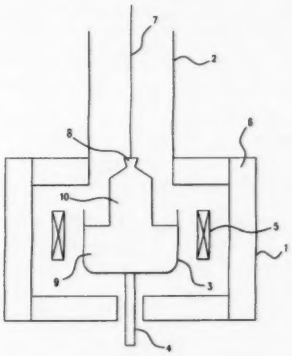
Hiroshi Asano; Yukio Sugimoto, and Fusao Tabata, all of Hyogo, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jun. 2, 2000, Appl. No. 585,466

Claims priority, application Japan, Dec. 1, 1998, 10-341722

Int. Cl. C03B *15/20*

U.S. Cl. 117—13 **1 Claim**



1. A method for manufacturing a silicon single crystal using a Czochralski method, comprising:

melting a polycrystalline silicon material in a furnace having an internal pressure between 65 and 400 mbar, wherein a silicon melting solution is formed; and

pulling the silicon single crystal from the melting solution when the internal furnace pressure is both less than 95 mbar and less than the internal pressure during the melting.

US 6,340,391 B1

METHOD FOR PRODUCING SINGLE CRYSTAL AND PULLING DEVICE

Eiichi Iino, Annaka, and Kouji Kitagawa, Nishishirakawa-gun, both of Japan, assignors to Shin-Etsu Handotai Co., Tokyo, Japan

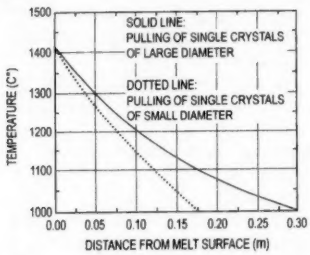
PCT No. PCT/JP99/06815, § 371 Date Aug. 14, 2000, § 102(e) Date Aug. 14, 2000, PCT Pub. No. WO00/40786, PCT Pub. Date Jul. 13, 2000

PCT Filed Dec. 6, 1999, Appl. No. 622,181

Claims priority, application Japan, Dec. 28, 1998, 10-372793

Int. Cl. C30B *15/02*

U.S. Cl. 117—13 **13 Claims**



1. A method for producing a single crystal by pulling the single crystal with a wire according to the Czochralski method, wherein temperature around an end of joint part of the wire and a seed crystal holder is controlled so as not to exceed 1200° C. at any time.

US 6,340,392 B1

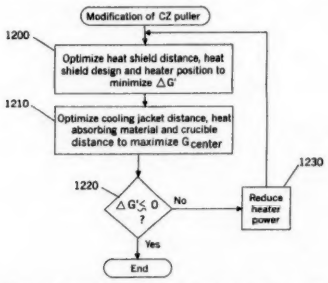
PULLING METHODS FOR MANUFACTURING MONOCRYSTALLINE SILICONE INGOTS BY CONTROLLING TEMPERATURE AT THE CENTER AND EDGE OF AN INGOT-MELT INTERFACE

Jae-gun Park, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Division of application No. 09/320,102, filed on May 26, 1999, now Pat. No. 6,146,459, which is a continuation-in-part of application No. 08/989,591, filed on Dec. 12, 1997, now Pat. No. 6,045,610, Provisional application No. 60/063,086, filed on Oct. 24, 1997. This application Sep. 12, 2000, Appl. No. 660,456.

Int. Cl. C30B *15/02*

U.S. Cl. 117—13 **22 Claims**



1. A method of modifying a Czochralski puller to grow perfect monocrystalline silicon ingots that are free to vacancy agglomerates and interstitial agglomerates, the Czochralski puller comprising an enclosure, a crucible in the enclosure that holds a silicon melt, a seed holder in the enclosure adjacent the crucible, a heater in the enclosure surrounding the crucible, a heat pack in the enclosure surrounding the heater, a heat shield between the crucible and the seed holder, a cooling jacket between the heat shield and the seed holder, and means for pulling the seed holder away from the crucible to thereby pull a monocrystalline silicon ingot from the silicon melt, the monocrystalline silicon ingot having an axis and a cylindrical edge, the silicon melt and the ingot defining an ingot-melt interface therebetween, the method of modifying the Czochralski puller to grow perfect monocrystalline silicon ingots comprising the step of:

selecting at least one of the position of the heat shield, the configuration of the heat shield, the position of the heater, the configuration of the cooling jacket, the position of the crucible, the configuration of the heat pack and the power that is applied to the heater to produce a temperature gradient at the ingot-melt interface that is greater than about 2.5 degrees Kelvin per millimeter at the axis and that is also at least about equal to the temperature gradient at a diffusion length from the cylindrical edge.

US 6,340,393 B1

METHOD FOR SYNTHESIZING N-TYPE DIAMOND HAVING LOW RESISTANCE

Hiroshi Yoshida, Kawanishi, Japan, assignor to Japan Science and Technology Corporation, Kawaguchi, Japan

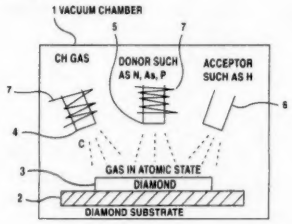
PCT No. PCT/JP99/03383, § 371 Date Mar. 7, 2000, § 102(e) Date Mar. 7, 2000, PCT Pub. No. WO00/01867, PCT Pub. Date Jan. 13, 2000

PCT Filed Jun. 24, 1999, Appl. No. 508,053

Claims priority, application Japan, Jul. 7, 1998, 10-208611

Int. Cl. C30B *29/04*

U.S. Cl. 117—86 **11 Claims**



1. A method for synthesizing an *n*-type diamond single crystal thin film having low resistance, the method including the steps of:

forming a single crystal diamond thin film on a substrate by a vapor-phase growth method or a sputtering method; and

simultaneously doping N, P or As as an *n*-type dopant, and H as a p-type dopant in a crystal to form a donor-acceptor pair in the crystal, to thereby synthesize the n-type diamond single crystal thin film having low resistance.

US 6,340,394 B1

SILO GRANULAR FEED DISTRIBUTION AND LADDER CHUTE APPARATUS

William H. Cook, Jr., Lakeland, Fla., assignor to ARR-MAZ Products, L.P., Winter Haven, Fla.

Provisional application No. 60/163,810, filed on Nov. 5, 1999. This application Mar. 7, 2000, Appl. No. 520,652.

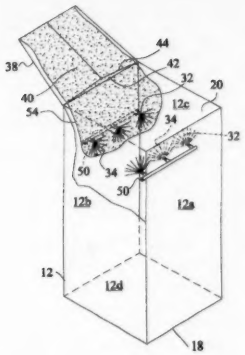
Int. Cl. B05B *17/00;* **B05D** *7/00*

U.S. Cl. 118—303 **27 Claims**

1. A granular feed distribution and ladder chute apparatus for use within a silo comprising:

a longitudinal vertically oriented ladder chute portion having four sides, a bottom end, and an open upper end, the four sides forming a rectangular shaped chute, wherein two opposite sides are parallel to each other and wider than corresponding shorter opposite and parallel sides;

the ladder chute portion has a plurality of flights, the flights being inwardly directed extensions of a predetermined width and each flight being fixed to one of two opposing internal sides of the ladder chute portion;



each flight further extending angularly from the one of two opposing internal sides a predetermined length downwardly toward a center of the ladder chute;

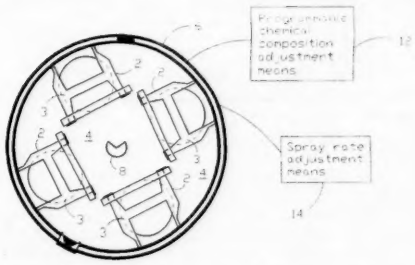
the plurality of flights further being staggered along opposing opposite internal sides such that the plurality of flights alternate in a predetermined space-apart relationship between the bottom end and the upper end of the ladder chute portion; and

at least one nozzle being located at at least one of the four sides proximate the upper end of the ladder chute portion and above an upper most flight of said plurality of flights, the at least one nozzle being directed such that a predetermined spray pattern may be formed for spraying a concentration of a conditioning agent on a falling granular feed.

US 6,340,395 B1
SALSA CLEAN PROCESS

Jacques Bertrand, Capitola, Calif.; Barry Dick, Austin, Tex.; Shu Tsai Wang, San Jose, Calif.; Weiwen Ou, Berkeley, Calif.; Lynne A. Okada, Sunnyvale, Calif., and Yen C. Chu, Cupertino, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Provisional application No. 60/176,527, filed on Jan. 18, 2000. This application Mar. 16, 2000, Appl. No. 526,753.
Int. Cl. C23G *1/02*
U.S. Cl. 134—2 **6 Claims**



1. A process for cleaning the surface of a silicon wafer consisting of the sequential steps of:

(a) providing a silicon wafer having a surface;

(b)(i) exposing said silicon wafer surface to a Sulfuric Peroxide Mixture (SPM) having a first chemical composition, then immediately thereafter and without any intervening drying step,

(ii) rinsing said SPM from said silicon wafer surface with De-Ionized (DI) water;

said steps (b)(i) and (b)(ii) being performed at least one time; *then immediately thereafter and without any intervening* drying step,

(c)(i) exposing said silicon wafer surface to an Ammonium Peroxide Mixture (APM) having a second chemical composition, then immediately thereafter and without any intervening drying step,

(ii) rinsing said APM from said silicon wafer surface with DI water;

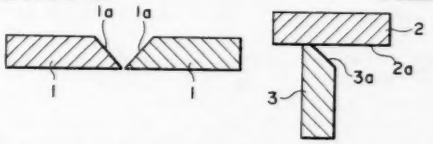
(d) repeating steps (b)–(c) at least one time; and

(e) drying said silicon wafer surface.

US 6,340,396 B1
FLUX CORED WIRE FOR WELDING DUPLEX STAINLESS STEEL

Tsuneshi Ogawa; Toshiharu Maruyama; Haruya Kozuki, and Shintaro Ozaki, all of Fujisawa, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Sep. 8, 1999, Appl. No. 391,361
Claims priority, application Japan, Dec. 9, 1998, 10-349657
Int. Cl. B23K *35/34*
U.S. Cl. 148—23 **4 Claims**



1. A flux cored wire for welding duplex stainless steel, comprising a shell cored with a flux, wherein

the total of the shell and the flux comprises MgO, Cr, Mo and N in amounts of 0.08– 0.35 wt %, 21.0–26.0 wt %, 2.6–4.0 wt % and 0.08–0.30 wt %, respectively, of the total weight of the wire;

the amounts of C and Bi in said wire and a metal having a melting point over 2000° C. in said flux are 0.04 wt % or less, 0.015 wt % or less, and 0.1 wt % or less, respectively, of the total weight of the wire;

the total amount of Ni powder and Fe powder in said flux is 3.0 wt % or less of the total weight of the wire; and

a parameter A represented by {Cr}+3.3×{Mo}+16×{N}–150×{Bi}, where {Cr}, {Mo}, {N} and {Bi} represent the contents of Cr, Mo, N and Bi, respectively, is from 33.0 to 43.0 wt % of the total weight of the wire.

US 6,340,397 B1
METHOD FOR MAKING LOW CORE LOSS, WELL-BONDED, SOFT MAGNETIC PARTS

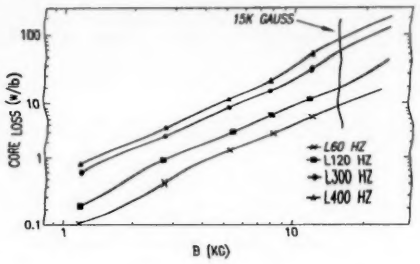
David S. Lashmore, Lebanon; Glenn L. Beane, Hanover; Lev Deresh, Plainfield, and Zonglu Hua, Lebanon, all of N.H., assignors to Materials Innovation, Inc., West Lebanon, N.H.

Division of application No. 09/183,080, filed on Oct. 30, 1998, which is a division of application No. 09/010,073, filed on Jan. 21, 1998, now Pat. No. 5,982,073, Provisional application No. 60/069,832, filed on Dec. 16, 1997. This application Feb. 11, 1999, Appl. No. 249,343.
Int. Cl. H01F *1/03*
U.S. Cl. 148—104 **9 Claims**

1. A method of making a soft magnetic part comprising the steps of:

a. providing a plurality of ferromagnetic particles;

b. applying a coating composition onto each of said particles, said coating composition comprising from about 40% to about 85% by weight of a member selected from the group consisting of FeO, Fe_3O_4, Fe_2O_3, $(Fe_2O_3.H_2O)$ and combinations thereof; and from about 15% to about 60% by weight of a member selected from the group consisting of $FePO_4$, $Fe_3(PO_4)_2$, $FeHPO_4$, $Fe_3(PO_4)_2.2H_2O$, $Fe_2(PO_4)_3.8H_2O$, $FeCrO_4$, $FeMoO_4$, FeC_2O_4, $FeWo_4$, and combinations thereof; and



c. consolidating said coated particles in the shape of said part.

US 6,340,398 B1

OXIDATION PROTECTIVE COATING FOR MO-SI-B ALLOYS

Triplicane A. Parthasarathy; Madan G. Mendiratta, both of Beavercreek, and Dennis M. Dimiduk, Bellbrook, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 4, 2000, Appl. No. 542,788

***Int. Cl. C23C** 8/60*

U.S. Cl. 148—279 **1 Claim**

1. A method for enhancing the oxidation resistance of substrates fabricated from carbon-carbon and metals and alloys which have a minimal reaction with molybdenum, which comprises depositing a layer of molybdenum on the surface, then depositing silicon on the molybdenum layer under conditions which cause the formation of an outer layer of $MoSi_2$, wherein said silicon is deposited on said molybdenum layer by placing said substrate with said molybdenum deposit thereon in a container vessel together with silicon powder and a catalyst, evacuating said vessel, and heating the resulting assembly to a temperature of about 800° to 900° C. for about 2 to 20 hours.

US 6,340,399 B1

NON-ORIENTED ELECTRICAL STEEL SHEET AND METHOD FOR PRODUCING THE SAME

Ichiro Tanaka, Amagasaki; Hiroyoshi Yashiki, Kobe; Mitsuyo Maeda, Sakai; Taisei Nakayama, Osaka; Noriyuki Honjou, Wakayama, and Shinsuke Mita, Sennan, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jun. 14, 2000, Appl. No. 593,744

Claims priority, application Japan, Jun. 19, 1999, 11-169759

Int. Cl. H01F *1/147*

U.S. Cl. 148—308 **13 Claims**

1. A non-oriented electrical steel sheet of 0.1 to 0.4 mm in thickness with the following chemical composition and characteristics:

the chemical composition on a mass-% basis:

C: 0.01% or less,

Si: 2.5% or less,

Mn: 2% or less,

Al: 1 to 5%,

Si+Al+0.5×Mn: 2.5 to 5%,

Sb: 0.3% or less, Sn: 0.3% or less, B: 0.01% or less,

the balance: Fe and impurities,

the characteristics:

Average grain diameter: 50 to 180 μm, and

Vickers hardness: 130 to 210.

US 6,340,400 B1

STAINLESS STEEL

Xiao Bo Zhou, Nieuwegein, Netherlands, assignor to SKF Engineering & Research Centre B.V., Nieuwegein, Netherlands

PCT No. PCT/NL99/00173, § 371 Date Oct. 10, 2000, § 102(e) Date Oct. 10, 2000, PCT Pub. No. WO99/49094, PCT Pub. Date Sep. 3, 1999

PCT Filed Mar. 26, 1999, Appl. No. 646,954

Claims priority, application Netherlands, Mar. 26, 1998, 1008722

***Int. Cl. C21D** 6/02; **C22C** 38/40*

U.S. Cl. 148—605 ***11 Claims***

1. Method for preparing a stainless steel component consisting essentially of iron, 0.8–1.4 wt % carbon, 18–26 wt % chromium, 2–4 wt % nickel, 0–1 wt % molybdenum, 0 wt % lead and less than 0.6 wt % silicon, said method comprising the provision of an article from a steel powder starting material, and austenitizing the article between 800° C. and 970° C. followed by hardening.

US 6,340,401 B1

GAS GENERATING COMPOSITION

Brian K. Wheatley, Marshall; James D. Martin, Manassas, and Robert D. Lynch, Warrenton, all of Va., assignors to Atlantic Research Corporation, Gainesville, Va.

***Division of application No. 09/130,455, filed on Aug. 7, 1998,* now Pat. No. 6,136,113. This application Feb. 7, 2000, Appl. No. 499,030.**

***Int. Cl. D03D** 23/00*

U.S. Cl. 149—109.6 **15 Claims**

1. A method of simultaneously increasing the burning rate and decreasing the pressure exponent without adversely affecting other propellant properties in a composition for generating a clean, nontoxic, substantially ash- and solids-free gas to automatically inflate an inflatable structure, comprising forming a eutectic mixture or solid solution of ammonium nitrate, guanidine nitrate and/or aminoguanidine nitrate, potassium or cesium nitrate or perchlorate, a polyvinyl alcohol binder, and adding to said eutectic mixture or solid solution an effective amount of copper or a selected copper compound catalyst.

US 6,340,402 B1

FILTERS

Cesare Lucarelli, deceased, late of Leicester, United Kingdom, by Jennifer Mary Lucarelli, executrix, and Brett Halpin, Pompton Lakes, N.J., assignors to Microtech Filters Limited, United Kingdom

Filed Jan. 15, 1999, Appl. No. 232,563

Claims priority, application United Kingdom, Jan. 16, 1998, 9800831

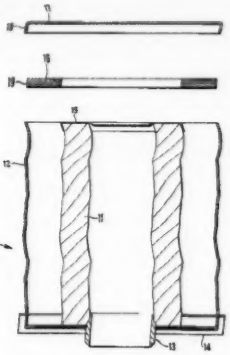
Int. Cl. B32B *31/00*; **A62B** *13/00*; **B01D** *35/30*

U.S. Cl. 156—92 **3 Claims**

1. A method of assembly of a NBC filter comprising a tubular formation of an inner filter medium closed at at least one end by a metallic inner end cap having a first peripheral skirt, a tubular mass of granulated carbon surrounding said inner filter medium to form an outer filter medium, a mesh tube enclosing said outer filter medium, an annular, resilient gasket surrounding said inner end cap and an outer end cap of metallic material having a second peripheral skirt which, in use, surrounds one end of the mesh tube while the gasket is compressed between the outer end cap and the carbon mass,

the method comprising interposing a thixotropic adhesive between the inner periphery of the gasket and the first peripheral skirt of the inner end cap, between the outer periphery of the gasket and mesh tube and between the gasket and the outer end cap, and allowing said adhesive to cure,

wherein during assembly and before said adhesive cures said adhesive fills any voids between said mesh tube, said gasket and said outer end cap, and after curing said adhesive pro-



vides a seal against escape of particulate matter from said carbon mass but retains sufficient resilience to allow said gasket to function,

and wherein said adhesive does not bond said inner filter medium to said inner end cap.

US 6,340,403 B1

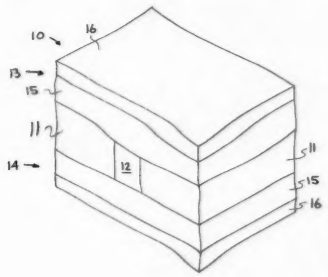
SOLAR CELL MODULE LAMINATION PROCESS

Paul G. Carey, Mountain View; Jesse B. Thompson, Brentwood, and Randy C. Aceves, Tracy, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of application No. 08/230,509, filed on Apr. 20, 1994, now abandoned. This application Oct. 4, 1995, Appl. No. 538,838.

Int. Cl. B32B *31/00*

U.S. Cl. 156—182 **22 Claims**



1. A process for encapsulating a device without adversely affecting the operation and efficiency of the device while protecting it from adverse environmental conditions, comprising:

forming a pair of fluoropolymer laminates consisting of three layers by positioning only a layer of fluoropolymer material on a layer of adhesive material having a release liner on an opposite side thereof;

positioning the thus formed pair of laminates in a laminator apparatus;

removing the release liner of each of the pair of fluoropolymer laminates; and

passing the device to be encapsulated through the laminator apparatus such that the adhesive material and the fluoropolymer material of each of the pair of laminates are secured on opposite sides of the device.

US 6,340,404 B1

OPTICAL FUNCTIONAL MATERIALS AND PROCESS FOR PRODUCING THE SAME

Motohiro Oka; Mitsuru Tsuchiya; Norinaga Nakamura; Kiyotaka Takematus; Yurie Ota; Hiroko Suzuki; Natsuko Yamashita, and Hiroomi Katagiri, all of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

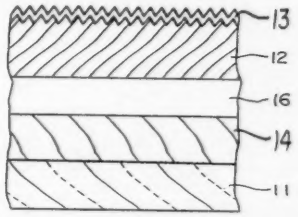
Division of application No. 09/277,752, filed on Mar. 29, 1999, now Pat. No. 6,064,524, which is a division of application No. 08/388,257, filed on Feb. 13, 1995, now Pat. No. 5,909,314.

This application Mar. 24, 2000, Appl. No. 534,506.

Claims priority, application Japan, Feb. 15, 1994, 6-42022; Apr. 14, 1994, 6-100582; Apr. 14, 1994, 6-100583; Feb. 6, 1995, 7-41238

Int. Cl. B32B *31/00*

U.S. Cl. 156—230 **26 Claims**



1. A process for producing an antiglare-antireflection film, said process comprising the steps of:

(1) coating a resin composition comprising a binder resin and fine particles having a high refractive index, which is higher than the refractive index of said binder resin, on a transparent substrate film directly or through other layer(s), the refractive index of said resin Composition being higher than that of a layer in direct contact with the underside of a layer using said resin composition in a layer construction of an antiglare-antireflection film as a final product;

(2) laminating a matte embossing film having a fine uneven surface onto the resultant coating so that the fine uneven surface faces the coating;

(3) subjecting said laminate to heat treatment and/or irradiation with ionizing radiation to cure the coating;

(4) peeling off said embossing film from said laminate having a cured coating to form an antiglare layer having a fine uneven surface; and

(5) forming on said antiglare layer formed in said step (4) a low refractive index layer that is lower than the refractive index of said antiglare layer, the low refractive index layer comprising an SiO_x film containing undecomposed organosiloxane, wherein x is $1.50 \leq x \leq 4.00$, the surface of said SiO_x film having a contact angle with water of 40° to 180°, and said SiO_x film having a refractive index of 1.35 to 1.48.

US 6,340,405 B2

ETCHING APPARATUS FOR MANUFACTURING SEMICONDUCTOR DEVICES

Choul-gue Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 22, 1997, Appl. No. 996,100

Claims priority, application Rep. of Korea, Dec. 24, 1996, 96-70900

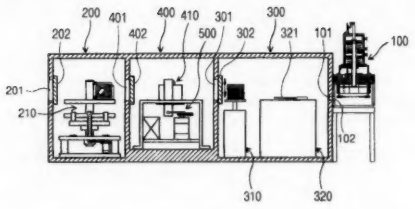
Int. Cl. B44C *1/22;* **D05D** *3/06;* **C03C** *15/00;25/06*

U.S. Cl. 156—345 **17 Claims**

1. An etching apparatus for manufacturing semiconductor devices, comprising:

one or more process chambers for etching a wafer, the wafer having a processing surface facing down, the one or more process chambers being maintained under a vacuum;

a cassette supply chamber for supplying a plurality of wafers to the one or more process chambers, the cassette supply chamber having a cassette supply table for receiving a cassette, the



cassette having two or more supporting legs and housing a plurality of wafers stacked in the cassette with processing surfaces facing down, the cassette supply chamber being maintained under atmospheric conditions;

a load lock chamber for transferring the wafers housed in the cassette from the cassette supply chamber to the one or more process chambers, the load lock chamber being installed between the one or more process chambers and the cassette supply chamber, the load lock chamber having an elevator for moving the cassette up and down, and having a wafer transporting mechanism for transferring the wafers from the cassette to the one or more process chambers one by one while maintaining orientation of each wafer with the processing surface facing down;

a cassette transport mechanism for transferring the cassette from the cassette supply table in the cassette supply chamber to the elevator in the load lock chamber; and

a wafer aligning chamber containing a wafer aligning mechanism installed between the cassette supply chamber and the load lock chamber for simultaneously aligning multiple wafers stacked in the cassette, and for transferring the cassette with aligned wafers stacked therein to the load lock chamber.

US 6,340,406 B1

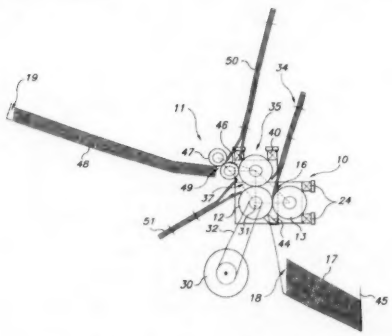
SIMPLE PRESSURE SEAL UNITS

Rebecca L. Parker, Grand Island, N.Y., and Richard C. Meyer, Alfred, Me., assignors to Moore North America, Inc., New York

Filed Mar. 24, 1999, Appl. No. 274,992

Int. Cl. B31B *21/06*

U.S. Cl. 156—442.1 **5 Claims**



1. A pressure sealing apparatus for acting on business forms having pressure activated cohesive to seal the cohesive, said apparatus comprising:

first and second pressure-seal rollers rotatable about substantially parallel first and second axes of rotation, respectively, and in operative association with each other so as to define a nip which supplies sufficient pressure so as to activate pressure activated cohesive on a business form passing through said nip;

drive means for driving at least one of said pressure-seal rollers to effect movement of a business form completely through said nip; and

holding means for holding a business form having pressure activated cohesive in a position distinct from said nip but so that the business form will substantially automatically be engaged by and pass through said nip upon operation of said drive means,

wherein said holding means comprises a primarily vertically disposed flip plate positioned with respect to said nip so that the trailing edge of a business form entering the flip plate will ultimately enter said nip and become the leading edge of the business form,

wherein said pressure-seal rollers consist essentially of said first and second rollers and a third roller rotatable about a third axis of rotation substantially parallel to said first and second axes of rotation, and in operative association with said first roller so as to define a second nip which supplies sufficient pressure so as to activate pressure activated cohesive on a business form passing through said second nip, and

further comprising a business form folder, including a first folder roller rotatable about a fourth axis of rotation substantially parallel to said third axis, and operatively positioned with respect to said third pressure-seal roller and first and second fold plates so that said third roller effects folding of a business form passing between said third pressure-seal roller and said first folder roller, and effects sealing of the business form when passing from said second fold plate through said second nip.

US 6,340,407 B1

PROCESS OF MAKING RECYCLED LINERBOARD OR KRAFT PAPER FROM OLD CORRUGATED CONTAINER

Sun Ho Chung, 83-19, Chungdam-dong, Kangnam-ku, Seoul, Rep. of Korea

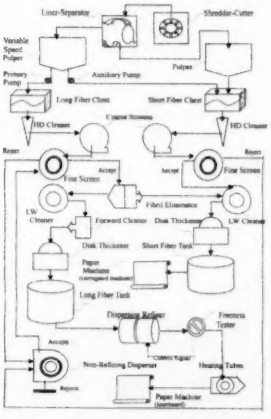
Filed Mar. 28, 2000, Appl. No. 536,450

Claims priority, application Rep. of Korea, Dec. 22, 1999, 99-60720

This patent is subject to a terminal disclaimer.

Int. Cl. D21C *5/02*

U.S. Cl. 162—5 **14 Claims**



1. In a process of making a stock preparation for recycled linerboard or Kraft paper wherein OCC is defibered, cleaned, screened, fractionated into long fibers and short fibers, long fibers being refined to required level of freeness, virgin pulps added to achieve required strength properties, and deposited on a wire and dewatered, the strength properties of the stock are improved by a process comprising the steps of:

cutting and/or crushing OCC that contains corrugated medium attached to linerboard into pieces,

separating linerboard pieces from corrugated medium pieces,

removing any remaining corrugated medium pieces from OCC furnish containing the separated linerboard pieces,

adding NaOH to the separated linerboard pieces in the OCC furnish,

defibering the separated linerboard pieces in the OCC furnish,

eliminating micro-fibrils from long fibers in the OCC furnish,

minimizing the loss of long fibers by recovering any long fibers from reject streams,

applying dry strength additives to the OCC furnish, and

maintaining a furnish pH of from 5.5 to 6.5 at the head box of paper machine.

US 6,340,408 B1

METHOD OF PREPARATION OF A FLUFFED PULP TO BE USED IN ABSORBENT PRODUCTS

Leif Norlander, Falun, Sweden, assignor to Stora Kopparbergs Bergslags Aktiebolag (Publ), Falun, Sweden

PCT No. PCT/SE97/00561, § 371 Date Sep. 24, 1998, § 102(e) Date Sep. 24, 1998, PCT Pub. No. WO97/39188, PCT Pub. Date Oct. 23, 1997

PCT Filed Apr. 10, 1997, Appl. No. 155,244

Claims priority, application Sweden, Apr. 15, 1996, 9601412

Int. Cl. D21C *1/02;* **D21H** *1/08;21/22;17/66*

U.S. Cl. 162—20 **15 Claims**

1. A method of preparing fluffed pulp for the manufacture of absorbent material which is to be used as a component in absorbent products, comprising the steps of:

adjusting the pH of a stock, which consists essentially of bleached chemical pulp consisting of cellulosic fibres in aqueous suspension, to 4<pH<8;

adding at least one water-soluble, non-polymeric aluminium salt to the stock, said salt in aqueous solution at said pH forming at least one hydrocomplex with aluminium of the type $Al(OH)_n^x$, where n is a number between 1 and 3, and x is 0, + or 2+;

causing said slat in aqueous solution to act on the cellulosic fibres in said suspension at said pH during a period of time of at least 2 min; and

forming the fibre pulp thereafter into a web, which is dewatered and dried, in which fibre pulp the fibres are separated through defibration in dry state of the pulp, by a supply of defibration energy not exceeding 130 kg/kg dry substance, giving a network strength of at least 7 N/g to form a fluffed pulp.

US 6,340,409 B1

METHOD FOR MULTISTAGE BLEACHING USING GASEOUS REAGENT IN THE FIRST STAGE WITH CONTROLLED GAS RELEASE

Lewis Donald Shackford, 8 Riverside Dr., Merrimack, N.H. 03054

Filed Apr. 29, 1993, Appl. No. 54,588

Int. Cl. D21C *7/06;9/153*

U.S. Cl. 162—52 **7 Claims**

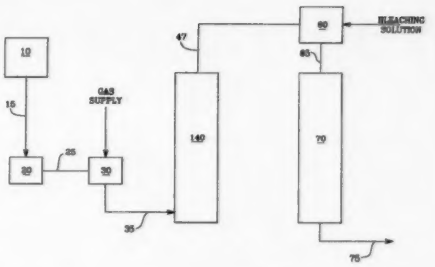
1. A method for transporting pulp from an initial gaseous bleaching stage to subsequent bleaching stages, comprising the steps of:

supplying a medium consistency pulp to a pulp contactor apparatus included in the initial gaseous bleaching stage which comprises an ozone bleaching stage;

delivering to the pulp contactor apparatus a gaseous bleaching reagent at a predetermined pressure;

maintaining the pressure of the gaseous bleaching reagent within the pulp contactor apparatus;

discharging the medium consistency pulp from the pulp contactor apparatus under said gas pressure;



using the gas pressure maintained by the pulp contactor apparatus as the motive force to transport the medium consistency pulp and the gaseous bleaching reagent to at least an immediately subsequent bleaching stage;

disposing a mixer between the initial gaseous bleaching stage and the immediately subsequent bleaching stage; and

releasing a portion of the gas pressure from said mixer to reduce the quantity of the gaseous bleaching reagent carried forward to the immediately subsequent bleaching stage.

US 6,340,410 B1

METHOD FOR DELIVERING A VARIABLE FLOW OF HYDROGEN PEROXIDE TO A BLEACHING VESSEL

Etienne Lepoutre, Saint-Germain-en-Laye, France, assignor to Atofina, France

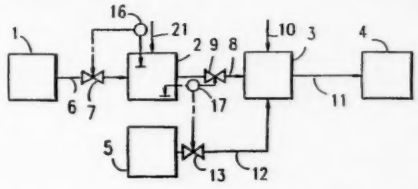
PCT No. PCT/FR97/00473, § 371 Date Apr. 1, 1999, § 102(e) Date Apr. 1, 1999, PCT Pub. No. WO97/34828, PCT Pub. Date Sep. 25, 1997

PCT Filed Mar. 17, 1997, Appl. No. 142,795

Claims priority, application France, Mar. 18, 1996, 96 03356

Int. Cl. D21C *9/16*

U.S. Cl. 162—62 **13 Claims**



1. Method for supplying hydrogen peroxide having a predetermined concentration to a bleaching vessel which consumes hydrogen peroxide at a variable rate which comprises:

generating hydrogen peroxide having a concentration, which is greater than or equal to the predetermined supplying concentration, on the site of the bleaching vessel or in the immediate proximity of this site wherein a generation rate varies from a minimum generation rate and a maximum generation rate;

temporarily storing the hydrogen peroxide thus generated in at least one holding tank; and

drawing the hydrogen peroxide from the holding tank and, when the generating concentration of said hydrogen peroxide is greater than the predetermined supplying concentration, diluting said hydrogen peroxide with water to the predetermined supplying concentration, the drawing of said hydrogen peroxide being carried out at a variable rate which corresponds to said variable consuming rate, and feeding said hydrogen peroxide to the bleaching vessel

wherein the consuming rate varies from a number greater than 0 to a maximum consuming rate, and the difference between the minimum and maximum generation rates is smaller than the maximum consuming rate and,

wherein the liquid level in the holding tank varies between a highest level and a predetermined low level, and as soon as the liquid level in the holding tank in the holding tank becomes the predetermined low level, hydrogen peroxide having a concentration equal to or greater than the predetermined supplying concentration is drawn from a back-up tank and diluted with water to the predetermined supplying concentration when the back-up tank concentration is greater than the predetermined supplying concentration, and fed to the bleaching vessel.

US 6,340,411 B1

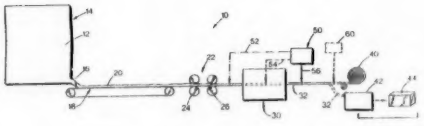
FIBROUS PRODUCT CONTAINING DENSIFYING AGENT

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Division of application No. 08/693,517, filed on Aug. 2, 1996, now abandoned, which is a division of application No. 08/197,483, filed on Feb. 16, 1994, now Pat. No. 5,547,541, which is a continuation-in-part of application No. 08/192,692, filed on Feb. 7, 1994, now abandoned, application No. 09/167,995, which is a continuation-in-part of application No. 08/108,219, filed on Aug. 17, 1993, now Pat. No. 5,607,759, and application No. 08/108,218, filed on Aug. 17, 1993, now Pat. No. 5,641,561, and application No. 08/108,217, filed on Aug. 17, 1993, now Pat. No. 5,547,745, and application No. 08/107,469, filed on Aug. 17, 1993, now Pat. No. 5,672,418, and application No. 08/107,467, filed on Aug. 17, 1993, now Pat. No. 5,693,411, and application No. 07/931,284, filed on Aug. 17, 1992, now Pat. No. 5,308,896, and application No. 07/931,279, filed on Aug. 17, 1992, now Pat. No. 5,589,256, and application No. 07/931,278, filed on Aug. 17, 1992, now Pat. No. 5,352,480, and application No. 07/931,277, filed on Aug. 17, 1992, now Pat. No. 5,538,783, and application No. 07/931,213, filed on Aug. 17, 1992, now Pat. No. 5,300,182, and application No. 07/931,059, filed on Aug. 17, 1992, now Pat. No. 5,543,215. This application Oct. 7, 1998, Appl. No. 167,995.

Int. Cl. D21H *17/04*

U.S. Cl. 162—173 **19 Claims**



1. In a fibrous product which comprises a wet laid mat of fibers having hydrogen bonding functional sites that can be air laid into a web, compressed, and then released under a first set of conditions to provide a web of air laid fibers densified to a first density, the improvement consisting essentially of:

a wet laid mat of wood pulp fibers having a basis weight of at least 350 grams per square meter to be air laid into a web; and

a densifying agent applied to the wet laid mat of wood pulp fibers in an amount effective to increase the density of the air laid web of wood pulp fibers to a value greater than the first density after compressing and then releasing the air laid web of wood pulp fibers having a densifying agent applied thereto under the first set of conditions, wherein the densifying agent consists essentially of a non-polymeric organic material that includes a hydroxyl functionality and the densifying agent and wood pulp fibers form hydrogen bonds in the absence of covalent bonds between the densifying agent and the wood pulp fibers.

US 6,340,412 B1

METHOD FOR DETERMINING THE DETACHING ANGLE AND/OR THE DETACHING PROFILE OF A PAPER WEB

Pertti Niemi, Vesanka, Finland, assignor to Fotocomp Oy, Jyvaskyla, Finland

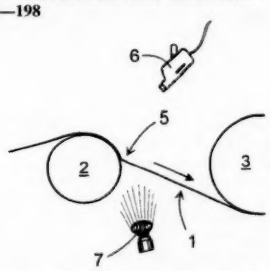
PCT No. PCT/FI99/00339, § 371 Date Oct. 26, 2000, § 102(e) Date Oct. 26, 2000, PCT Pub. No. WO99/60204, PCT Pub. Date Nov. 25, 1999

PCT Filed Apr. 27, 1999, Appl. No. 674,406

Claims priority, application Finland, Apr. 27, 1998, 980917; Dec. 17, 1998, 982730

Int. Cl. D21F *7/00;* **G01N** *33/34*

U.S. Cl. 162—198 **8 Claims**



1. A method for determining the detaching angle and/or detaching profile of a paper web, in which the paper web travels through sequential first and second guide devices and detaches from the first guide device so that the paper web deviates from a tangential angle from the detachment point onwards and the detachment point forms a detachment profile in the transverse direction of the paper web, characterized in that

the detaching profile is illuminated over the entire width of the paper web in such a way that an optically visible difference is created between the paper web that is attached to the first guide device and that which has detached from it, and

the detaching profile is photographed from one side of the web using at least one video camera, and

a value and/or group of values depicting the desired detachment profile is formed from the video image with the aid of pattern recognition.

US 6,340,413 B1

EMBOSSING BELT FOR A PAPER MACHINE

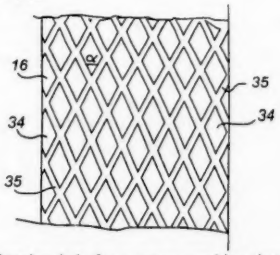
Göran Nilsson, Oskarström, and Bo-Christer Åberg, Halmstad, both of Sweden, assignors to Albany International AB, Halmstad, Sweden

Continuation of application No. PCT/SE99/00435, filed on Mar. 19, 1999. This application Sep. 19, 2000, Appl. No. 665,632.

Claims priority, application Sweden, Mar. 20, 1998, 9800947

Int. Cl. D21F *3/00*

U.S. Cl. 162—361 **15 Claims**



1. An embossing belt for a paper machine, intended to run through a press section in the paper machine together with a fibrous web and produce embossment thereof in the press section, and to transfer the embossed fibrous web from the press section

directly to and through a transfer means in the dryer section of the paper machine, characterised in that

it is essentially impermeable and comprises a rear layer (**33**) and a web-contacting layer (**34**), which has a large number of uniformly distributed depressions (**35**) and, positioned therebetween, surface portions (**36**) for forming a corresponding relief pattern in the fibrous web passing through the press section, that

said rear layer (**33**) is a carrier and that

said web-contacting layer (**34**) is a compressible polymer layer having a hardness of between 50 and 97 Shore A, said polymer layer having a web-contacting surface which has a pressure-sensitive, resettable degree of roughness, the web-contacting surface having a degree of roughness in a non-compressed state of R_z=2–80μm, and a lower degree of roughness of R_z=0–20μm when the polymer layer is compressed by a linear load of 20–220 kN/m applied to the essentially impermeable embossing belt as measured in a non-extended press nip.

US 6,340,414 B1

PROCESS FOR THE RECOVERY OF PERFLUORINATED SULPHONIC ACIDS FROM SPENT ACID

Sven Ivar Hommeltoft, Hillerød, Denmark, assignor to Haldor Topsoe A/S, Lyngby, Denmark

Filed Jul. 7, 1999, Appl. No. 348,917

Claims priority, application Denmark, Jul. 31, 1998, 00995

Int. Cl. B01D *3/34;* **C07C** *303/44;309/06*

U.S. Cl. 203—49 **11 Claims**

1. Process for the recovery of fluorinated sulphonic acid, the process comprising the steps of:

withdrawing spent fluorinated sulphonic acid from an acid catalyst process to obtain a withdrawn spent acid;

passing the withdrawn spent acid to thermal treatment in the presence of n-pentane as an inert stripping agent with stepwise or continuously increasing temperature;

obtaining at least two distillation fractions during the thermal treatment; and

recovering the fluorinated sulphonic acid from each of the at least two fractions.

US 6,340,415 B1

METHOD AND APPARATUS FOR ENHANCING A SPUTTERING TARGET'S LIFETIME

Ivo J. Raaijmakers, Phoenix, Ariz.; Robert S. Busacca, San Francisco, and John Lane, San Jose, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jan. 5, 1998, Appl. No. 2,819

Int. Cl. C23C *14/34*

U.S. Cl. 204—192.12 **29 Claims**

23. A method of sputtering comprising:

providing a substantially compliant cooling cover plate having an elastic modulus of 3×10^9 N/m^2 or less;

attaching a sputtering target to the substantially compliant cooling cover plate to form a target assembly; and

cooling the target assembly during sputtering.

US 6,340,416 B1

PROCESS AND SYSTEM FOR OPERATING MAGNETRON DISCHARGES

Klaus Goedicke, Dresden; Torsten Winkler, Radeberg; Michael Junghähnel, Dresden; Fred Fietzke, Dresden; Volker Kirchhoff, Dresden, and Jonathan Reschke, Radebeul, all of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschund e.V., Munich, Germany

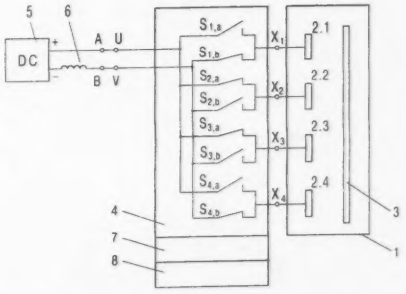
PCT No. PCT/EP98/00340, § 371 Date Jul. 22, 1999, § 102(e) Date Jul. 22, 1999, PCT Pub. No. WO98/33201, PCT Pub. Date Jul. 30, 1998

PCT Filed Jan. 22, 1998, Appl. No. 341,998

Claims priority, application Germany, Jan. 23, 1997, 197 02 187

Int. Cl. C23C *14/34*

U.S. Cl. 204—192.12 **25 Claims**



1. A process for operating magnetron discharges for vacuum coating in an apparatus that includes at least two magnetron electrodes disposed in an inert gas and a power supply, the process comprising:

supply pulsed energy from the power supply to the at least two magnetron electrodes in successively repeating first and second periods;

wherein in the first period, the process further comprises cathodically connecting at least one of the at least two magnetron electrodes and anodically connecting at least one of the at least two magnetron electrodes with the pulsed energy, wherein the pulsed energy in the first period is composed of a number of pulses n_1 of a first polarity with a frequency between 10 kHz and 150 kHz, and the number n_1 is greater than 1; and

wherein the second period, the process further comprises cathodically connecting at least one other of the at least two magnetron electrodes and anodically connecting at least one other of the at least two magnetron electrodes with the pulsed energy, wherein the pulsed energy during the second period is composed of a number of pulses n_2 of a second polarity that is opposite the first polarity with a frequency between 10 kHz and 150 kHz, and the number 2_2 is greater than 1.

US 6,340,417 B1

REACTOR AND METHOD FOR IONIZED METAL DEPOSITION

Zoran Krivokapic, Santa Clara, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 14, 1996, Appl. No. 616,990

Int. Cl. C23C *14/34*

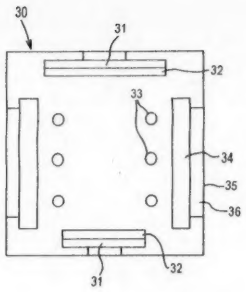
U.S. Cl. 204—192.17 **29 Claims**

1. A plasma sputtering apparatus comprising:

a chamber having an upper end, a lower end, and a vertical side surface connecting the upper and lower ends;

a first wafer support located at the lower end of the chamber;

a second wafer support located at the upper end of the chamber;



a coil of conductive material disposed between the first and second wafer supports;

a target support positioned between the vertical side surface and the coil;

means for applying radio frequency energy to the coil; and

means for applying a radio frequency or direct current bias to each wafer support.

US 6,340,418 B1

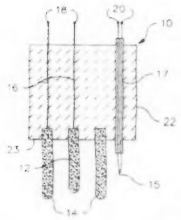
SLAG OXYGEN SENSOR

Ethem T. Turkdogan, 5820 Northumberland St., Pittsburgh, Pa. 15217

Provisional application No. 60/122,190, filed on Mar. 1, 1999. Provisional application No. 60/122,811, filed on Mar. 4, 1999. This application Feb. 25, 2000, Appl. No. 513,837.

Int. Cl. G01N *27/30*

U.S. Cl. 204—400 **10 Claims**



1. An electrochemical sensor for insertion into molten slag for determining an activity of a metal oxide in the slag comprising:

a reference electrode comprising a mixture of (i) a metal or a metal alloy and (ii) a metal oxide, the metal or the metal alloy and the metal oxide each being exposed on a surface of the reference electrode;

at least one oxide electrode comprising (i) a metal alloy, (ii) a mixture of a metal and a metal oxide or (iii) a mixture of a metal and a metal silicide different from the mixture of the reference electrode, the metal alloy, the metal oxide and the metal silicide of the oxide electrode each being exposed on a surface of the oxide electrode; and

a refractory housing holding the reference electrode and the at least one oxide electrode wherein the reference electrode and the at least one oxide electrode extend from within the refractory housing such that the surface of the reference electrode and the surface of the oxide electrode are each in direct contact with the molten slag when the sensor is inserted into the slag.

US 6,340,419 B1

MULTILAYERED AIR-FUEL RATIO SENSING ELEMENT

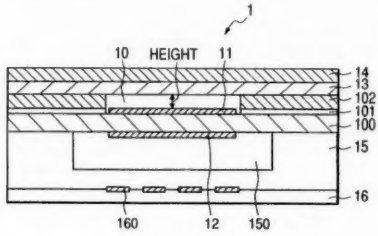
Makoto Nakae, Toyoake, and Tomio Sugiyama, Nagoya, both of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Aug. 24, 1999, Appl. No. 379,914

Claims priority, application Japan, Aug. 25, 1998, 10-238794

Int. Cl. G01N *27/407*

U.S. Cl. 204—429 **9 Claims**



1. A multilayered air-fuel ratio sensing element comprising:

a solid electrolytic substrate having oxygen ion conductivity;

a measuring gas sensing electrode provided on one surface of said solid electrolytic substrate so as to be exposed to a measuring gas;

a reference gas sensing electrode provided on another surface of said solid electrolytic substrate so that said reference gas sensing electrode is exposed to a reference gas introduced into a reference gas chamber;

a porous diffusive resistor layer covering said measuring gas sensing electrode;

a hollow space provided between said measuring gas sensing electrode and said porous diffusive resistor layer; and

a substantially gas impervious shielding layer covering at least part of an outer surface of said porous diffusive resistor layer provided outside said hollow space.

US 6,340,420 B1

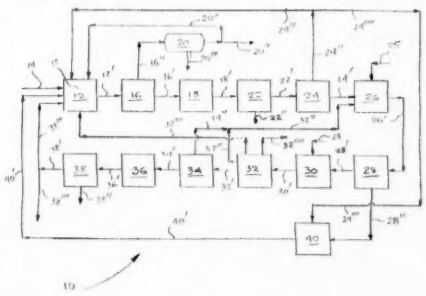
METHODS OF TREATING THE OXIDATION MIXTURE OF HYDROCARBONS TO RESPECTIVE DIBASIC ACIDS

Mark W. Dassel, Indianola, Wash., and Eustathios Vassiliou, Newark, Del., assignors to RPC Inc., Atlanta, Ga.

Provisional application No. 60/091,796, filed on Jul. 6, 1998. This application Jun. 30, 1999, Appl. No. 345,880.

Int. Cl. B01D *61/44*

U.S. Cl. 204—529 **34 Claims**



1. A method of treating a reaction mixture produced by direct oxidation of hydrocarbon to a respective dibasic acid in a reaction zone, the reaction mixture comprising a monobasic acid solvent having only primary and/or secondary hydrogen atoms, water, and a catalyst, the method being characterized by steps of:

(a) removing a major part of the dibasic acid and a major part of the monobasic acid solvent from the reaction mixture;

(b) adding a base and optionally water into the reaction mixture after it has been treated according to step (a), thus precipitating the hydroxide of the catalyst and forming a salt with any acids present; and

(c) removing the hydroxide of the catalyst.

US 6,340,421 B1

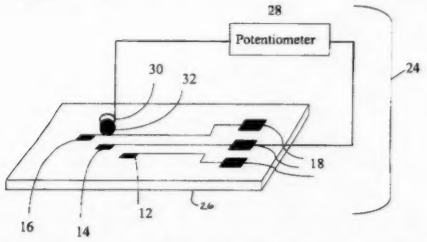
MICROELECTROGRAVIMETRIC METHOD FOR PLATING A BIOSENSOR

David J. Vachon, Granada Hills, and Jenn-Hann Wang, Van Nuys, both of Calif., assignors to MiniMed Inc., Sylmar, Calif.

Provisional application No. 60/204,408, filed on May 16, 2000. This application Aug. 18, 2000, Appl. No. 642,623.

Int. Cl. C25D *5/00*

U.S. Cl. 205—133 **26 Claims**



1. A method for depositing an electroative species onto a electrode, the method comprising:

(a) dispensing a solution the electroative species from a microdispenser to from a hanging drop of the solution;

(b) contacting the first electrode with the hanging drop of solution, wherein the first electrode is electrically coupled with the microdispenser to form an electrochemical cell; and

applying an electrical current to the electrochemical cell, wherein the application of the current effects deposition of the electroative species onto the electrode.

US 6,340,422 B1

METHOD FOR ELECTROPLATING METALLIC AND NON-METALLIC ENDLESS PRODUCTS AND DEVICE FOR CARRYING OUT SAID METHOD

Hans de Vries, Heerde, Netherlands, and Jörg Heller, Engelskirchen, Germany, assignors to Aluminal Oberflachentechnik GmbH, Germany

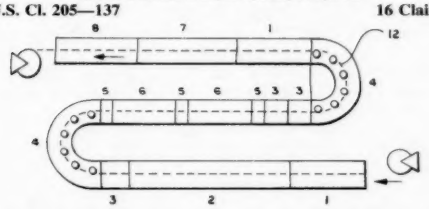
PCT No. PCT/EP98/02196, § 371 Date Nov. 1, 1999, § 102(e) Date Nov. 1, 1999, PCT Pub. No. WO98/48081, PCT Pub. Date Oct. 29, 1998

PCT Filed Apr. 15, 1998, Appl. No. 403,430

Claims priority, application Germany, Apr. 19, 1997, 197 16 493

Int. Cl. C25D *5/00;5/54;7/06;5/34;5/48*

U.S. Cl. 205—137 **16 Claims**



1. A process for electroplating one or more metallic or non-metallic continuous products with metals or metal alloys in a continuous process from aprotic electrolytes free of water and oxygen, wherein a continuous product is passed through a lock system (**1**) into an encapsulated coating plant, and the following steps are performed within the encapsulated coating plant under inert gas atmosphere at temperatures of ≦120° C. in the following order:

a. activating the continuous product;

b. rinsing the continuous product;

c. contacting the continuous product electrically;

d. electroplating the continuous product using a metal or metal alloy to form a coated continuous product;

e. drying the coated continuous product; and

f. discharging the coated continuous product from the coating plant through a lock system;

wherein the continuous product is passed from outside through the lock system (**1**) into the encapsulated coating plant and the activation and rinsing of the continuous product are performed thereafter in the coating plant.

US 6,340,423 B1

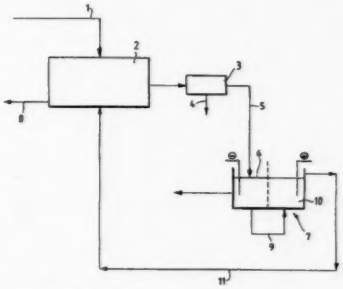
HYDROMETALLURGICAL PROCESSING OF LEAD MATERIALS USING FLUOTITANATE

Willem P. C. Duyvesteyn, Reno, Nev., assignor to BHP Minerals International, Inc., Houston, Tex.

Provisional application No. 60/128,997, filed on Apr. 12, 1999. This application Mar. 10, 2000, Appl. No. 523,082.

Int. Cl. C25C *1/18*

U.S. Cl. 205—600 **22 Claims**



1. A hydrometallurgical process for processing lead comprising:

a. leaching a source of lead with a leach solution to form a leachate containing ferrous fluro compounds and lead fluro compounds wherein the leach solution contains fluotitanate, and not more than 50% fluoborate by weight of the leach solution;

b. feeding the leachate to an electrolytic cell in which lead is deposited in pure form at the cathode and ferrous ions are oxidized to ferric ions at the anode.

US 6,340,424 B1

MANUFACTURE OF COMPLEXLY SHAPED ARTICLES USING AN AUTOMATED DESIGN TECHNIQUE

Larisa Alexandra Elman, Swampscott; Steven Michael Burgess, Lynnfield, and Zhuo-Ru Ding, Brighton, all of Mass., assignors to General Electrical Company, Cincinnati, Ohio

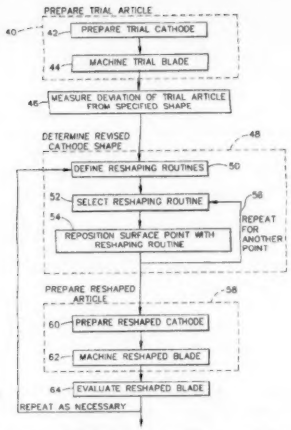
Filed Aug. 17, 2000, Appl. No. 640,923

Int. Cl. B23H *3/00*

U.S. Cl. 205—645 **19 Claims**

8. A method for producing an article having a specified shape and comprising an integrated compressor disk and blades, the method using an electrochemical machining process having a cathode defined by a set of cathode shape parameters, the method comprising the steps of:

preparing a trial article having a trial shape using the electrochemical machining process having a cathode defined by a set of trial shape parameters;



measuring a set of deviations of the trial shape from the specified shape at a plurality of surface grid points on a surface of the trial article;

determining a set of revised cathode shape parameters, the step of determining including the steps of

defining at least one reshaping routine specific to the shaped article, each reshaping routine repositioning at least one adjacent surface grid point responsive to a repositioning of a repositioned surface grid point, the reshaping routine including an automatic step of establishing a smoothly varying shape of the surface,

selecting a selected reshaping routine,

repositioning a selected surface grid point using the selected reshaping routine, the reshaping routine responsively repositioning at least one adjacent surface grid point and establishing a smoothly varying shape of the surface, and

repeating the steps of selecting and repositioning for another surface grid point until all grid points on the surface of the trial shape are moved to locations defined by the specified shape, the steps of selecting, repositioning, and repeating producing the set of revised cathode shape parameters; and

preparing a reshaped article using the electrochemical machining process and a reshaped cathode defined by the revised cathode shape parameters.

US 6,340,425 B2

METHOD OF MANUFACTURING COLD CATHODE DEVICE HAVING POROUS EMITTER

Fuminori Ito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 7, 2000, Appl. No. 544,476

Claims priority, application Japan, Apr. 8, 1999, 11-101344

Int. Cl. C25D *5/00;5/02;* **C25F** *3/12*

U.S. Cl. 205—655 **12 Claims**

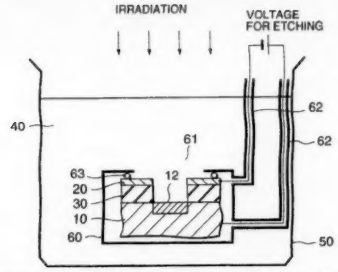
1. A method for manufacturing a cold cathode device which has a porous silicon portion as an emitter portion, the method including:

forming an object that comprises a silicon layer, a gate electrode, and an insulator layer interposed between the silicon layer and the gate electrode, the gate electrode having a gate aperture, the insulator layer having a through-hole corresponding to the gate aperture, the silicon layer having a predetermined portion exposed inside the through-hole;

soaking a part of the object into an electrolytic solution to fill both the through-hole and the gate aperture with the electrolytic solution; and

giving the silicon layer an electric potential, while giving the gate electrode another potential lower than that of the silicon layer, so that the predetermined portion is subjected to anodic etching to be rendered into the porous silicon portion, and thereby, the object is changed into the cold cathode device.

3. A manufacturing method as claimed in claim **2**, further comprising irradiating the predetermined portion through both the through-hole and the gate aperture from a vertical direction with respect to the gate electrode, during the giving the electric potential to the silicon layer.



US 6,340,426 B1

ELECTROLYTIC TREATMENT METHOD

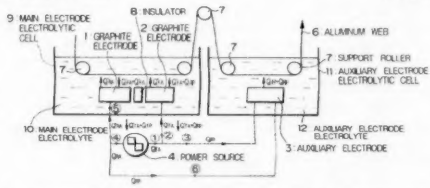
Akio Uesugi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 23, 2000, Appl. No. 599,940

Claims priority, application Japan, Jun. 25, 1999, 11-179788

Int. Cl. B41N *3/03*

U.S. Cl. 205—687 **9 Claims**



1. An electrolytic treatment method for electrolytic treatment of a target material disposed in an electrolytic treatment solution that is contained within an electrolytic jar, the solution comprising nitrate or hydrochloric acid, the method comprising:

dividing said electrolytic jar into two separate sections;

arranging and installing at least one main electrode in a first one of the two sections and an auxiliary electrode in a second one of the two sections of the electrolytic jar;

supplying electric power having an alternating current waveform to the electrodes; and

setting an electric power quantity of the auxiliary electrode in the range of 0.5% to 9% of a total quantity of the electric power being supplied to the electrodes.

US 6,340,427 B1

SOLUTION PURIFICATION METHOD FOR ELECTROLYTE

Atsushi Fukui; Kouji Ando, and Masaki Imamura, all of Niihama, Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Feb. 29, 2000, Appl. No. 516,020

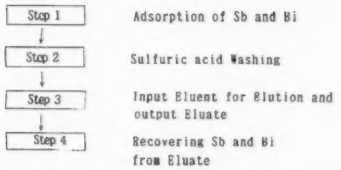
Claims priority, application Japan, Mar. 1, 1999, H11-053203

Int. Cl. C02F *1/46*

U.S. Cl. 205—688 **11 Claims**

1. A solution purification method for an electrolyte comprising the steps of dividing a chelate resin having a volume corresponding to the quantity of substances to be adsorbed into a plurality of columns, bringing an electrolyte into contact with the chelate resin

Drawings



in the columns to adsorb the substances for removing, respectively, and subjecting a predetermined number of columns which have completed adsorption among the plurality of columns, to washing in turn, such that the columns are fed in series with a washing solution wherein the electrolyte contains copper, and the substances to be removed from the electrolyte are Sb and Bi.

US 6,340,428 B1

DEVICE AND METHOD FOR DETERMINING THE CONCENTRATION OF A SUBSTRATE

Shin Ikeda, Katano; Toshihiko Yoshioka, and Shiro Nankai, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka, Japan

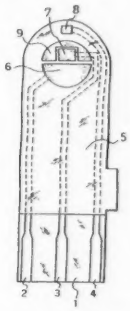
PCT No. PCT/JP99/01706, § 371 Date Nov. 29, 1999, § 102(e) Date Nov. 29, 1999, PCT Pub. No. WO99/51974, PCT Pub. Date Oct. 14, 1999

PCT Filed Mar. 31, 1999, Appl. No. 424,715

Claims priority, application Japan, Apr. 2, 1998, 10/089740; Jun. 19, 1998, 10/172766

Int. Cl. G01N *27/26*

U.S. Cl. 205—777.5 **9 Claims**



1. A method for determining the concentration of a substrate in a sample solution using a biosensor comprising an electrically insulating base plate, an electrode system having a working electrode, a counter electrode and a third electrode to be used as an interfering substance detecting electrode, each being formed on said base plate, and a reaction layer which contains at least an oxidoreductase and an electron mediator and is formed on the electrode system omitting the third electrode, wherein said electron mediator is reduced by the produced electrons upon reaction between the substrate contained in the sample solution and the oxidoreductase to measure a reduced amount of said electron mediator electrochemically,

said method being characterized by comprising:

(a) a step of applying a voltage between the counter electrode and the third electrode;

(b) a step of supplying the sample solution to the reaction layer;

(c) a step of detecting an electrical change between the counter electrode and the third electrode due to supply of the sample solution to the reaction layer;

(d) a step of measuring a current flowing between the counter electrode and the third electrode after said detecting step (c);

(e) a step of releasing voltage application between the counter electrode and the third electrode after said measuring step (d);

(f) a step of applying a voltage between the working electrode and the counter electrode; and

(g) a step of subsequently measuring a current flowing between the counter electrode and the working electrode.

US 6,340,429 B1

PROCESS AND DEVICE FOR SEPARATING ETHANE AND ETHYLENE FROM A STEAM-CRACKING EFFLUENT BY SOLVENT ABSORPTION AND HYDROGENATION OF THE SOLVENT PHASE

Ari Minkkinen, Saint Nom la Breteche; Jean-Hervé Le Gal, Paris, and Pierre Marache, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison Cedex, France

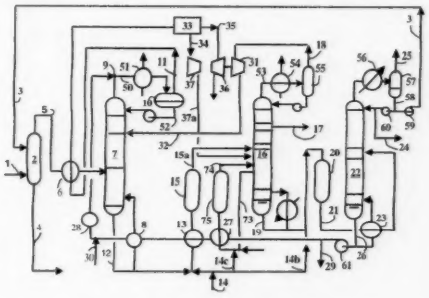
Filed Aug. 16, 2000, Appl. No. 638,895

Claims priority, application France, Aug. 17, 1999, 99 10578

This patent is subject to a terminal disclaimer.

Int. Cl. C10G *67/04*

U.S. Cl. 208—87 **18 Claims**



1. A process for separating a mixture that consists essentially of ethane and ethylene from a hydrocarbon steam-cracking effluent, whereby the effluent comprises hydrogen, methane, ethylene, ethane, acetylene, methylacetylene, propadiene, propene and hydrocarbons with at least 4 carbon atoms, whereby the process is characterized in that:

said effluent (**1**) is absorbed in at least one absorption column (**7**) by a cooled solvent phase (**9**) under suitable absorption conditions, and a gaseous phase (**50**) that contains in particular hydrogen and methane is recovered at the top of the column and a partly liquid phase is recovered at the bottom of the column that contains the solvent that is enriched with ethylene, ethane, acetylene, methylacetylene, propadiene, propene and hydrocarbons with at least 4 carbon atoms;

the liquid phase is hydrogenated in at least one catalytic hydrogenation zone (**15**) in the presence of hydrogen and a hydrogenation catalyst under suitable hydrogenation conditions, and at least one liquid phase that is at least partly hydrogenated and that essentially does not contain acetylene is recovered;

the following stage sequence is carried out:

the liquid phase that is at least in part hydrogenated is circulated in at least a first distillation column (**16**), and there is recovered: at the top of the column, a gaseous phase that is condensed to separate a non-condensed vapor phase and a liquid phase that contains hydrocarbons with two carbon atoms as reflux; by a lateral draw-off, said mixture (**17**) that consists essentially of ethane and ethylene; and at the bottom of the column, a hydrocarbon-enriched solvent phase (**19**) with at least 3 carbon atoms (C_3^+);

the solvent phase is regenerated in at least a second distillation (regeneration) column (**22**), and a C_3^+-enriched fraction is recovered, and at the bottom, a regenerated solvent phase is recovered;

the solvent phase is cooled, and it is at least in part recycled in the absorption column.

US 6,340,430 B1

DISTILLATE DEWAXING PROCESS

Brian Murray Wood, Glenview, Ill., assignor to UOP LLC, Des Plaines, Ill.

Filed Sep. 15, 1999, Appl. No. 397,350

Int. Cl. C10G *45/00*

U.S. Cl. 208—89 **11 Claims**

1. A hydrotreating process which comprises:

a.) separating a distillate hydrocarbon fraction in a vapor/liquid separation zone in the presence of added hydrogen into a first vapor phase process stream comprising hydrocarbons boiling in the light diesel and kerosene boiling point ranges and a first liquid phase process stream comprising hydrocarbons boiling in the heavy diesel boiling point range;

b.) admixing hydrogen with the first liquid phase process stream to yield a second liquid phase process stream and then passing the second liquid phase process stream into a catalytic dewaxing zone operated at catalytic hydrodewaxing conditions and thereby producing a catalytic dewaxing zone effluent stream;

c.) admixing the first vapor phase process stream and the catalytic dewaxing zone effluent stream and producing a charge mixture having a lower temperature than the catalytic dewaxing zone effluent stream; and,

d.) passing said charge mixture into an aromatic hydrocarbon saturation zone operated at hydrogenation conditions which include a lower temperature than said catalytic hydrodewaxing conditions, and recovering a distillate product stream having a lower pour point and reduced aromatics content than said distillate hydrocarbon fraction.

US 6,340,431 B2

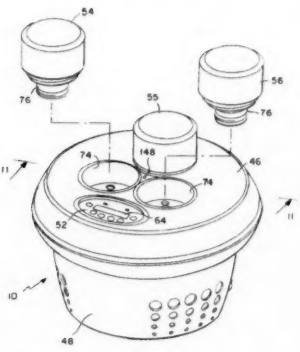
SPA CHEMISTRY MONITOR AND TREATMENT UNIT

Soudy Khan, Palto Alto, Calif., assignor to Polaris Pool Systems, Inc., Vista, Calif.

Continuation of application No. 09/179,908, filed on Oct. 27, 1998. This application Aug. 11, 2001, Appl. No. 927,720.

Int. Cl. B01D *17/12*

U.S. Cl. 210—85 **22 Claims**



1. A self-contained portable water chemistry monitor and treatment unit, comprising:

a buoyant housing adapted and sized for floating placement into a body of water within a spa or hot tub;

at least one sensor electrode carried on-board said housing in a position for immersion into the body of water when said housing is placed into the body of water;

a programmable controller carried on-board said housing for activating said at least one sensor electrode for automatically taking at least one selected water chemistry reading at predetermined time intervals;

at least one chemical agent carried on-board said housing;

dispense means carried on-board said housing and operated automatically by said controller to dispense said at least one chemical agent to the water in an amount responsive to said at least one water chemistry reading; and

power means carried on-board said housing for providing electrical power to operate the monitor and treatment unit.

US 6,340,432 B1

METHOD OF MAKING A CHIRAL STATIONARY PHASE BASED ON YOHIMBINE

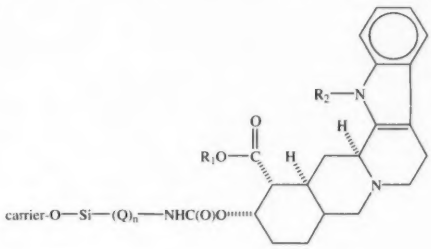
David W. House, Arlington Heights, Ill., assignor to UOP LLC, Des Plaines, Ill.

Division of application No. 09/227,958, filed on Jan. 11, 1999, now Pat. No. 6,132,606, which is a continuation-in-part of application No. 08/977,598, filed on Nov. 25, 1997, now Pat. No. 5,858,910. This application Mar. 29, 2000, Appl. No. 537,537.

Int. Cl. B01D *15/08*

U.S. Cl. 210—198.2 **6 Claims**

1. A process for making a chiral stationary phase represented by:

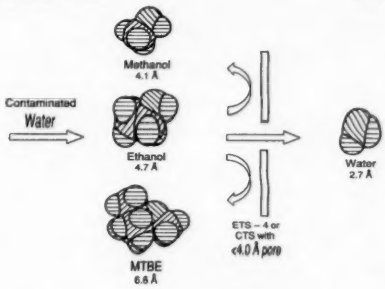


where carrier represents a refractory inorganic oxide having bound surface hydroxyl groups, O—Si is the covalent bond between the bound surface hydroxyl groups of said refractory inorganic oxide and silicon, where Q is selected from the group consisting of alkyl, phenyl, and substituted phenyl and n is an integer from about 1 to about 12, where R_1 is selected from the group consisting of alkyl moieties containing from 1 up to about 20 carbon atoms, and aryl and alkaryl moieties containing from 7 up to about 20 carbon atoms, and where R_2 is selected from the group consisting of hydrogen, alkyl moieties containing from 1 up to about 20 carbon atoms, alkylaminocarbonyl moieties having two to 10 carbon atoms, arylaminocarbonyl moieties having 6 to about 10 carbon atoms, and acyl moieties containing from 2 up to about 20 carbon atoms, comprising forming a reaction mixture containing yohimbine, an inert solvent, a hindered base, and a reactant represented by $OCN(Q)_xSi(Hal)_y(OR)_x$ where Hal is a halogen, R is an alkyl group, x and y are integers whose sum is equal to 3 and adding silica gel with stirring and reflux to the reaction mixture to form the chiral stationary phase.

US 6,340,433 B1
WATER PURIFICATION USING TITANIUM SILICATE MEMBRANES

Steven M. Kuznicki, Whitehouse Station; Richard M. Jacubinas, Somerville; Jacqueline S. Curran, Cranford, and Valerie A. Bell, Edison, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Sep. 15, 2000, Appl. No. 663,828
Int. Cl. B01D *61/00*
U.S. Cl. 210—651 **20 Claims**

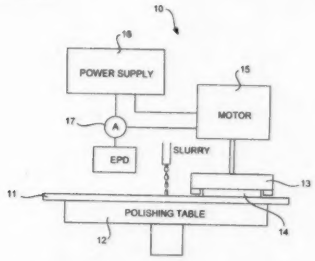


1. A method for removing organic and/or inorganic contaminants from an aqueous feed stream comprising contacting said aqueous feed stream with a membrane formed from a porous, crystalline titanium silicate, recovering a permeate rich in water and forming a retentate having a contaminant concentration greater than said aqueous feed stream said titanium silicate composed of six oxygen-coordinates octahedral which are connected three dimensionally by tetrahedral silicone oxide units or bridging titanium silicate units.

US 6,340,434 B1
METHOD AND APPARATUS FOR CHEMICAL-MECHANICAL POLISHING

Hiroshi Mizuno, Tsukuba; Osamu Kinoshita; Tetsuaki Murohashi, both of Ushiku; Akihisa Ueno; Yoshifumi Sakuma, both of Tsukuba, all of Japan, and Kostas Amberiadis, San Jose, Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Sep. 3, 1998, Appl. No. 148,028
Claims priority, application Japan, Sep. 5, 1997, 9-240829
Int. Cl. H01L *21/302;21/461;* **B24B** *1/00*
U.S. Cl. 216—38 **17 Claims**



1. A method for chemical-mechanical polishing of a layer that is deposited on a surface of an integrated circuit substrate, comprising:

immobilizing said integrated circuit substrate using a substrate holder, said integrated circuit substrate surface being positioned against a surface of a polishing pad and said polishing pad being mounted on a supporting surface;

a first stage of polishing said substrate surface including maintaining a difference between a rotational velocity of said polishing pad and a rotational velocity of said substrate holder allowing an endpoint of said chemical-mechanical polishing process of said layer to be detected; and

a second stage of polishing the substrate such that said rotational velocity of said polishing pad and said rotational velocity of said substrate holder are substantially the same to produce a substantially planar substrate surface.

US 6,340,435 B1
INTEGRATED LOW K DIELECTRICS AND ETCH STOPS

Claes H. Bjorkman, Mountain View; Min Melissa Yu; Hongquing Shan, both of San Jose; David W. Cheung, Foster City; Wai-Fan Yau, Mountan View; Kuowei Liu, Santa Clara; Nasreen Gazala Chapra, Menlo Park; Gerald Yin, Cupertino; Farhad K. Moghadam, Saratoga; Judy H. Huang; Dennis Yost, both of Los Gatos; Betty Tang, San Jose, and Yunsang Kim, Santa Clara, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of application No. 09/189,555, filed on Nov. 11, 1998, now abandoned, which is a continuation-in-part of application No. 09/162,915, filed on Sep. 29, 1998, which is a continuation-in-part of application No. 09/021,788, filed on Feb. 11, 1998, now Pat. No. 6,054,379. This application Jun. 9, 1999, Appl. No. 329,012.
Int. Cl. C23F *1/00*
U.S. Cl. 216—72 **14 Claims**

1. A process for depositing and etching intermetal dielectric layers, comprising:

depositing a first dielectric layer having a dielectric constant less than about 4.0;

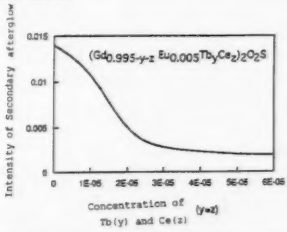
depositing a second dielectric layer having a dielectric constant less than about 4.0 on the first dielectric layer; and

etching the second dielectric layer under conditions wherein the second dielectric layer has an etch rate that is at least about three times greater than an etch rate for the first dielectric layer.

US 6,340,436 B1
PHOSPHOR, AND RADIATION DETECTOR AND X-RAY CT UNIT EACH EQUIPPED THEREWITH

Hiromichi Yamada, Tokyo; Ichiro Miura, Chiba-ken; Motomichi Doi; Osamu Miyazaki, both of Ibaraki-ken, and Minoru Yoshida, Tokyo, all of Japan, assignors to Hitachi Medical Corporation, Japan

PCT No. PCT/JP98/03063, § 371 Date Mar. 7, 2000, § 102(e) Date Mar. 7, 2000, PCT Pub. No. WO99/02622, PCT Pub. Date Jan. 21, 1999
PCT Filed Jul. 8, 1998, Appl. No. 462,321
Claims priority, application Japan, Jul. 8, 1997, 9-182221
Int. Cl. C09K *11/86;11/08;* **G01T** *1/20;* **A61B** *6/03*
U.S. Cl. 252—301.45 **15 Claims**



1. A phosphor represented by the general formula

$$(L_{1-x-y-z-d}Eu_xM_yCe_zM'_d)_2O_2S$$

wherein L is at least one element selected from the group consisting of Gd, La and Y, M is at least one element selected from the group consisting of Tb and Pr, M' is at least one element selected from the group consisting of Ca, Sr and Zn, and x, y, z and d are

values falling in the ranges of $0.001 \leqq x \leqq 0.06$, $0 < y \leqq 12 \times 10^{-5}$, $0 < z \leqq 12 \times 10^{-5}$, and $0 \leqq d \leqq 2.5 \times 10^{-4}$.

US 6,340,437 B1
PROCESS FOR PREPARING SYNTHESIS GAS BY AUTOTHERMAL REFORMING

Fuyuki Yagi; Atsuro Nagumo, both of Kawasaki; Yukitaka Wada, Yokohama; Mitsunori Shimura, Yokohama; Sachio Asaoka, Yokohama, and Shuhei Wakamatsu, Sagamihara, all of Japan, assignors to Chiyoda Corporation, Japan

PCT No. PCT/JP98/01688, § 371 Date Mar. 11, 1999, § 102(e) Date Mar. 11, 1999, PCT Pub. No. WO98/46525, PCT Pub. Date Oct. 22, 1998

PCT Filed Apr. 13, 1998, Appl. No. 254,636

Claims priority, application Japan, Apr. 11, 1997, 9-110436; Apr. 30, 1997, 9-126304; Jul. 31, 1997, 9-220092; Aug. 29, 1997, 9-250062

Int. Cl. C07C *1/02;* **C01B** *31/18;3/24;3/26;* **B01J** *23/40*

U.S. Cl. 252—373 **5 Claims**

1. A process for producing a synthesis gas from a carbon-containing organic compound, wherein the carbon-containing organic compound is partially oxidized to form a mixed gas having a temperature of at least 600° C. and containing an unreacted carbon-containing organic compound, and wherein the unreacted carbon-containing organic compound is reacted with steam and carbon dioxide in the presence of a catalyst,

wherein the amount of said steam is 2 moles or less per mole of carbon of said unreacted carbon-containing organic compound and 0.1–10 moles per mole of said carbon dioxide; wherein said reaction is performed at a pressure of 5–40 Kg/cm^2G;

wherein said catalyst comprises a carrier consisting essentially of magnesium oxide, and at least one catalytic metal selected from rhodium and ruthenium and supported on said carrier, wherein said catalyst has a specific surface area of 5.8 m^2/g or less, and wherein the amount of said catalytic metal is 0.001–0.08 mole %, in terms of metal, based on said carrier.

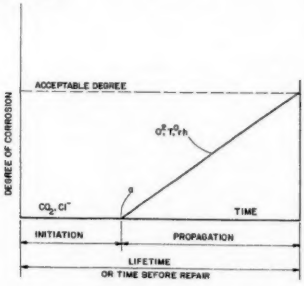
US 6,340,438 B1
CORROSION INHIBITING ADMIXTURE FOR CONCRETE

Donald R. Lane, Richfield; Jose A. Melendez, North Canton; Violeta F. Munteanu, Alliance, and Frederick D. Kinney, Broadview Heights, all of Ohio, assignors to Tomahawk, Inc., Wilmington, Del.

Filed Apr. 19, 1999, Appl. No. 295,117

Int. Cl. C23F *11/00*

U.S. Cl. 252—387 **8 Claims**



1. A corrosion inhibiting admixture to be added to concrete when in the plastic state forming a substantially homogeneous distribution of said admixture within said concrete comprising a combination of amines and nitrites wherein the amine:nitrite ratio (% by weight) is between about 1.5 to 2.5 and wherein said amines comprise about 20% to 40% by weight of said admixture and nitrites comprise about 15% to 30% by weight of said admixture, and further comprising gluconate and water.

US 6,340,439 B1
DEPRESSURIZATION METHOD IN PLASTICIZATION AND METERING PROCESS FOR A MOTOR-DRIVEN INJECTION MOLDING MACHINE

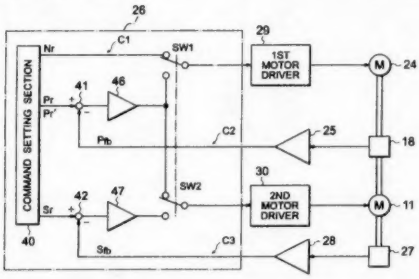
Kazuo Hiraoka, Chiba, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 17, 1999, Appl. No. 334,670

Claims priority, application Japan, Jun. 17, 1998, 10-169931

Int. Cl. B29C *45/77*

U.S. Cl. 264—40.1 **14 Claims**



1. A method for operating an injection molding machine, comprising:

(a) disposing a resin powder in a heating cylinder to melt the resin powder, creating a molten resin;

(b) rotating a screw disposed in the heating cylinder in a first direction to feed the molten resin to a nozzle end of the heating cylinder and adjusting the position of the screw along the longitudinal axis of the screw to achieve a first desired pressure of the molten resin at the nozzle end of the heating cylinder; and

(c) rotating the screw in the heating cylinder in a direction opposite the first direction to achieve a second desired pressure of the molten resin at the nozzle end of the heating cylinder; and

said first desired pressure is greater than said second desired pressure.

US 6,340,440 B1
PROCESS OF MAKING A TUBULAR CONTAINER

Jan Rune Pedersen, Odense, Denmark, assignor to Plastech A.p.S., Svendborg, Sweden

Continuation of application No. 08/875,781, filed as application No. PCT/SE96/00139, filed on Feb. 6, 1996, now abandoned. This application Oct. 10, 2000, Appl. No. 685,365.

Claims priority, application Sweden, Feb. 7, 1995, 9500455

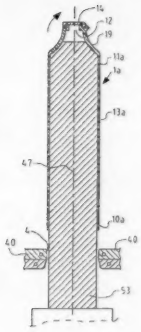
Int. Cl. B29C *55/22;* **B29D** *23/00*

U.S. Cl. 264—138 **18 Claims**

1. A method of producing a substantially tubular container body of plastic material which is open at one end and has at an opposite end, an emptying mouth with a closure means thereat, the container body having a substantially cylindrical wall between said ends thereof, the closure means being integral with said opposite end of the container body, said method comprising

introducing molten plastic material into an injection mould to form therein a blank comprising a body having a tubular portion which is open at one end and has a mouth at its opposite end and a closure means integrally formed with said body and providing a hinged closing member for said mouth,

subjecting the tubular portion of said blank to a drawing operation in which a wall of said tubular portion passes through a gap to cause said wall to undergo a reduction in thickness



while being elongated in length to form the tubular container body whose one end which is open and whose opposite end formed by said mouth with said closure means integrally formed thereat, the reduction of said wall thickness being between 2.5 and 5 times,

severing the tubular article at said open end to prepare said open end for closure to form a container after the tubular article is filled with its contents, and

wherein on removal of the blank from the injection mould, a mechanical device displaces the closure means to a position in which all parts of the closure means are located at a distance from a geometric center axis of the blank at most amounting to a distance between said geometric center axis and a surface of the gap located most proximal to said center axis.

US 6,340,441 B1

MULTI-LAYER GUIDE WIRE AND METHOD OF MANUFACTURE THEREFOR

Jon A. Meyer, Bellingham; Maura Rooney, Cambridge; Richard J. Quigley, Boston, and Thomas F. Mirarchi, Shrewsbury, all of Mass., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.

Filed Mar. 13, 1998, Appl. No. 42,292

Int. Cl. A61M *25/00;* **B29C** *47/06*

U.S. Cl. 264—173.12 **7 Claims**

1. A method for making a guide wire comprising the steps of:

providing an elongated core wire having a tapered portion with an outer axial surface; and

co-extruding at least two plastic jacket layers and a bonding layer over at least a portion of said outer axial surface;

co-extruding the bonding layer, the inner plastic jacket and the outer plastic jacket beyond a distal end of the elongated core wire to form an atraumatic tip, the atraumatic tip having a length and a width, the length being greater than the width; and

wherein a first jacket layer is disposed closer to said elongated core wire than a second jacket layer, said first jacket layer is thicker than said second jacket layer, said first jacket layer contains a concentration of a radiopaque agent, and said second jacket layer contains substantially no radiopaque agent, said first jacket layer and said second jacket layer forming a bond therebetween during said co-extruding step.

US 6,340,442 B1

METHOD AND APPARATUS FOR PRODUCING MOLDED TUBULAR OBJECTS FROM POLYMER CONCRETE

Manfred Brokmann, Osnabrueck, Germany, assignor to iloma Automatisierungstechnik GmbH, Osnabrueck, Germany

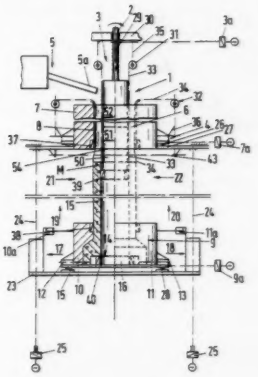
PCT No. PCT/EP95/03570, § 371 Date Mar. 28, 1997, § 102(e) Date Mar. 28, 1997, PCT Pub. No. WO96/07531, PCT Pub. Date Mar. 14, 1996

PCT Filed Sep. 11, 1995, Appl. No. 776,633

Claims priority, application Germany, Sep. 10, 1994, 44 32 333

Int. Cl. B28B *21/20;7/14;21/06;21/14;21/16*

U.S. Cl. 264—426 **55 Claims**



1. A method for the production of tubular products from a molding material in which said molding material is introduced into a molding space between a mold core and a mold casing which surrounds said mold core and said molding material is supported on a closing part disposed below said mold core and said mold casing, wherein said mold core and mold casing have a longitudinal central axis which is vertically disposed, comprising the steps of:

providing a mold core and a mold casing along with a molding space between said mold core and a mold casing;

providing said mold core and said mold casing each with an axial length which is less than the length of the tubular product to be produced;

introducing said molding material from above said molding space into said molding space to form a column of molding material in said molding space;

shaking said molding material which has been introduced into said molding space;

heating said molding material which has been introduced into said molding space;

commencing curing of said molding material in a lower region of said molding space;

discharging said molding material which has commenced curing from said lower region of said molding space in the form of a discharging column of solidified molding material;

lowering said discharging column of solidified molding material by lowering said closing part relative to said mold core and said mold casing;

passing additional molding material from above said molding space into said molding space;

simultaneously performing said passing step and said discharging step;

shaking said additional molding material in said molding space;

heating said additional molding material in said molding space; and

continuing lowering of said column of molding material until said column of molding material is at a height corresponding to a desired longitudinal length of the molded product which is greater than the axial length of Said mold core and said mold casing.

US 6,340,443 B1
FINE PARTICLE/POLYESTER SLURRY MELT-KNEADED IN EXTRUDER WITH POLYESTER

Hideshi Kurihara; Seiichi Takao; Kazumoto Miyajima; Shinya Yamamoto, and Toru Takase, all of Matsuyama, Japan, assignors to Teijin Limited, Tokyo, Japan

Continuation of application No. 08/888,929, filed on Jul. 7, 1997, now abandoned. This application Jun. 30, 2000, Appl. No. 607,968.

Claims priority, application Japan, Jul. 5, 1996, 8-176621

Int. Cl. B29C *47/38;* **C08K** *3/22;* **C08L** *67/02*

U.S. Cl. 264—464 **7 Claims**

1. A process for preparing a polyester composition, which comprises the steps of:

preparing a slurry of fine particles with an average size of from 0.03–1.8 μm and a polyester (B) in water and/or an organic compound with a boiling point of 240° C. or below, or preparing a slurry of said fine particles with an average size of from 0.03–1.8 μm which have had their surface modified with the polyester (B) in water and/or an organic compound with a boiling point of 240° C. or below;

feeding a polyester (A) and said slurry to a single-rotary-member or twin-rotary-member vented extruder; and

melt kneading said polyester (A) and said slurry,

wherein said polyester (A) comprises dry pellets of a polyester of which at least 70 mole percent of the repeating units consist of ethylene terephthalate, butylene terephthalate or ethylene naphthalate units, and

said polyester (B) comprises a polyester of which less than 70 mole percent of the repeating units consist of ethylene tereplithalate, butylene terephthalate or ethylene naphthalate units.

US 6,340,444 B1
HEAT TREATMENT APPARATUS

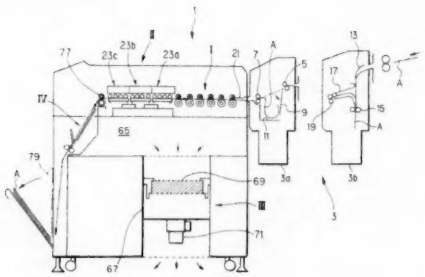
Akihiro Hashiguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 18, 2000, Appl. No. 551,316

Claims priority, application Japan, Apr. 23, 1999, 11-117036; May 11, 1999, 11-130159

Int. Cl. C21D *11/00*

U.S. Cl. 266—87 **20 Claims**



1. A heat treatment apparatus comprising:

a heating member which subjects a sheet to a heating process at a predetermined temperature;

moving means which moves the sheet;

a temperature-measured member, the temperature of which is measured, the measured temperature having a relationship with a temperature and a change in the temperature of said moving means, said temperature-measured member being disposed at a position adjacent to said moving means;

a temperature sensor disposed in contact with said temperature-measured member so as to effect the measuring of the temperature of said temperature-measured member; and

temperature control means which controls the temperature of said moving means based on the temperature measured by said temperature sensor.

US 6,340,445 B1
TI(C,N)-(TI,TA,W)(C,N)-CO ALLOY FOR SUPERFINISHING CUTTING TOOL APPLICATIONS

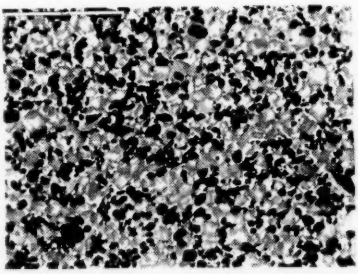
Anders Piirhonen, Sandviken; Marco Zwinkels, Solna; Ulf Rolander, Stockholm, and Gerold Weinl, Älvsjö, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed May 3, 2000, Appl. No. 563,502

Claims priority, application Sweden, May 3, 1999, 9901582

Int. Cl. C22C *14/00*

U.S. Cl. 420—417 **12 Claims**



4000×

1. A titanium based carbonitride alloy comprising Ti, Ta, W, C, N and Co, for light finishing operations at high cutting speeds having a binder comprising 3 to <9 at % Co with only impurity levels of Ni and Fe, the binder is solution hardened by W atoms to obtain a relative magnetic saturation below 0.75 and wherein the alloy is in the form of a body having a center and a surface, the body having substantially the same chemical composition from the center to the surface.

US 6,340,446 B1
NICKEL-FREE WHITE COPPER ALLOY

Kazuhiko Kita, Sendai; Yasuhiko Sugimoto, Kamiichi-machi; Yasuharu Yoshimura, and Takahiro Fukuyama, both of Kurobe, all of Japan, assignors to YKK Corporation, Tokyo, Japan

Filed Apr. 14, 2000, Appl. No. 549,541

Claims priority, application Japan, Apr. 16, 1999, 11-109648

Int. Cl. C22C *9/05*

U.S. Cl. 420—480 **10 Claims**

1. A nickel-free white copper alloy represented by the general formula: $Cu_aZn_bMn_cAl_d$, wherein b, c, and d are $0.5 \leqq b < 5$, $7 \leqq c \leqq 17$ and $0.5 \leqq d \leqq 4$ in terms of % by weight; and a is the balance, said alloy incidentally including unavoidable elements.

US 6,340,447 B2
METHODS OF USING ODOR ELIMINATING ITEMS FOR HUNTING

Louis B. Johnson, P.O. Box 381, Troy, Ala. 36081

Division of application No. 09/574,208, filed on May 19, 2000, Provisional application No. 60/136,760, filed on May 28, 1999. This application Jan. 12, 2001, Appl. No. 758,120.

Int. Cl. A61L *9/00*

U.S. Cl. 422—5 **19 Claims**

1. A method of preparing for hunting comprising:

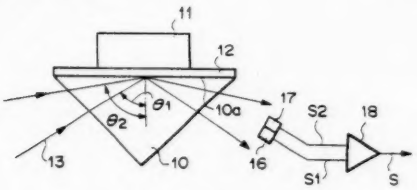
applying a liquid spray containing an amount of activated carbon up to 5.0% by weight to hunting apparel to be worn for hunting.

US 6,340,448 B1

SURFACE PLASMON SENSOR

Masayuki Naya, and Masami Hatori, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-Ken, Japan

Filed Feb. 5, 1999, Appl. No. 245,068
Claims priority, application Japan, Feb. 5, 1998, 10-024147; Sep. 14, 1998, 10-259577
Int. Cl. G01N *21/01*
U.S. Cl. 422—82.11 36 Claims



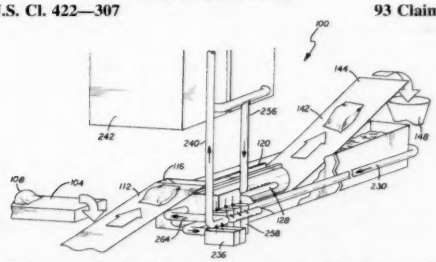
1. A surface plasmon sensor comprising:
a dielectric block,
a metal film which is formed on one face of the dielectric block and is brought into contact with a sample,
a light source emitting a light beam,
an optical system which causes the light beam to enter the dielectric block so that the light beam is reflected in total reflection at an interface of the dielectric block and the metal film and various angles of incidence of the light beam to the interface of the dielectric block and the metal film including an angle of incidence at which surface plasmon is generated can be obtained, and
a photodetector means which is able to detect the intensity of the light beam reflected in total reflection from the interface for the various angles of incidence,
wherein the improvement comprises that
a laser provided with an oscillation wavelength stabilizing means for stabilizing the wavelength at which the laser oscillates is used as the light source.

US 6,340,449 B1

SYSTEM AND METHOD FOR HEATING OR COOLING CONTENTS OF FLEXIBLE CONTAINERS

Timothy David Gallus, 35 Leebarry La., Las Cruces, N. Mex. 88012

Filed Mar. 26, 1999, Appl. No. 276,987
Int. Cl. F25D *17/02*
U.S. Cl. 422—307 93 Claims



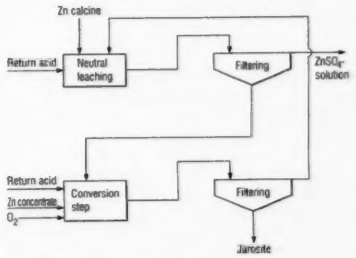
1. A system for heating or cooling contents of flexible containers, the system comprising:
a bath having a heating or cooling fluid therein to heat or cool contents of a flexible container when positioned in the bath; and
a nozzle system including first and second fluid nozzles, said second fluid nozzles opposing and offset from said first fluid nozzles, said first and second fluid nozzles positioned to dispense fluid on the flexible container when positioned therebetween and thereby cause central contents of the container to move away from a central area of the container to promote temperature transfer between the contents of the container and the bath fluid.

US 6,340,450 B1

METHOD FOR LEACHING ZINC CONCENTRATE IN ATMOSPHERIC CONDITIONS

Sigmund Fugleberg, Turku, and Aimo Järvinen, Kokkola, both of Finland, assignors to Outokumpu Oyj, Finland

PCT No. PCT/FI97/00469, § 371 Date Sep. 7, 1999, § 102(e) Date Sep. 7, 1999, PCT Pub. No. WO98/06879, PCT Pub. Date Feb. 19, 1998
PCT Filed Aug. 11, 1997, Appl. No. 230,859
Claims priority, application Finland, Aug. 12, 1996, 963154
Int. Cl. C22B *19/00*; C01G *49/00*
U.S. Cl. 423—109 3 Claims



1. A method for leaching zinc concentrate in atmospheric conditions in the presence of trivalent iron, comprising feeding the zinc concentrate and a sulfuric acid solution into a leaching step under atmospheric conditions where in addition to trivalent iron, there are also jarosite nuclei, where the sulfuric acid content in the leaching step is maintained within 10–40 g/l, and the temperature in the leaching step is maintained between 80° C. and the boiling point of the sulfuric acid solution, and where to the leaching step there is fed oxygen, so that the zinc concentrate is dissolved and the iron is precipitated as jarosite, wherein a portion of the jarosite precipitate is recirculated to the leaching step to form the jarosite nuclei in the leaching step.

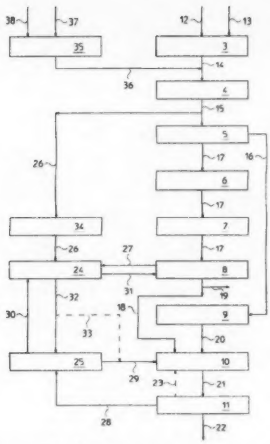
US 6,340,451 B1

METHOD FOR THE SIMULTANEOUS MODERNIZATION OF A PLANT FOR AMMONIA PRODUCTION AND A PLANT FOR UREA PRODUCTION

Giorgio Pagani, Lugano, and Federico Zardi, Breganzona, both of Switzerland, assignors to Ureaecasale S.A., Lugano-Besso, Switzerland

Filed Mar. 31, 2000, Appl. No. 538,971
Claims priority, application European Pat. Off., Mar. 31, 1999, 99201009
Int. Cl. C01C *1/04*; C07C *273/00*
U.S. Cl. 423—359 22 Claims

1. Method for the simultaneous modernisation of a plant for ammonia production and a plant for urea production, the plant for ammonia production comprising a section for the production of raw ammonia synthesis gas comprising carbon monoxide, hydrogen and nitrogen, a carbon monoxide conversion section, a decarbonation section, a methanation section, a compression section of the ammonia synthesis gas and an ammonia synthesis section, provided in series, the plant for urea production comprising a compression section of carbon dioxide, a urea synthesis section and a urea recovery section, said method being characterised in that it comprises the steps of:
providing a carbamate synthesis section and a carbamate decomposition section;



providing means for feeding a compressed raw ammonia synthesis gas flow comprising carbon dioxide, hydrogen and nitrogen to said carbamate synthesis section;

providing means for feeding a portion of a flow comprising ammonia, hydrogen and nitrogen obtained in said ammonia synthesis section to said carbamate synthesis section;

providing means for feeding at least part of a flow comprising carbamate in aqueous solution coming from said urea recovery section to said carbamate decomposition section;

providing means for feeding a flow comprising ammonia and carbon dioxide in vapour phase obtained in said decomposition section to said urea synthesis section;

providing means for feeding a flow comprising diluted carbamate in aqueous solution obtained in said carbamate decomposition section to said carbamate synthesis section;

providing means for feeding a gas flow comprising hydrogen and nitrogen obtained in said carbamate synthesis section to said ammonia synthesis section;

providing means for feeding a flow comprising carbamate in aqueous solution obtained in said carbamate synthesis section to said carbamate decomposition section and/or to said urea synthesis section.

US 6,340,452 B1

SODIUM PERCARBONATE AND PROCESS FOR PRODUCING IT

Jean-Michel Bossoutrot, St.-Genis Laval, and François Garcia, Brignais, both of France, assignors to Solvay, Belgium

Filed Mar. 18, 1997, Appl. No. 819,063

Claims priority, application France, Mar. 19, 1996, 96 03397

Int. Cl. C01B *15/10*

U.S. Cl. 423—415.2 **27 Claims**

1. Sodium percarbonate agglomerates comprising crystals of sodium percarbonate, wherein:

a) the average particle size of the agglomerates is greater than 600 μm,

b) the apparent density of the agglomerates is between about 0.75 g/cm^3 and about 1.1 g/cm^3,

c) the agglomerates comprise greater than 14% by mass of active oxygen,

d) the average particle size of the crystals of sodium percarbonate is from about 1 μm to about 100 μm,

e) the time required to dissolve 90% of 2 g of agglomerates in one liter of water at 15° C. is less than or equal to 90 seconds, and

f) the particle size of the agglomerates is between about 160 μm and about 1400 μm;

wherein the sodium percarbonate agglomerates are produced by a process comprising:

1) forming an aqueous supersaturated solution of sodium percarbonate in a reactor by placing a suspension or a solution of sodium carbonate in contact with an aqueous hydrogen peroxide solution,

2) stirring the entire reactor contents with crystals of sodium percarbonate generated from the aqueous supersaturated solution of sodium percarbonate maintained for a sufficiently long period of time in a position of contact or in a proximity which is sufficient for them to agglomerate and to create a bed of sodium percarbonate, wherein the sodium percarbonate is present in the form of crystals, agglomerates, or mixtures thereof,

3) maintaining the bed of sodium percarbonate crystals and/or agglomerates in suspension by contacting the bed with an ascending stream of the aqueous supersaturated solution of sodium percarbonate, wherein the solution forms a stream which ascends in a path and the linear ascending speed of the stream is between about 2 m/h and about 20 m/h,

4) removing the agglomerates from the suspension in a lower part of the bed and, thereafter, separating the agglomerates from a mother liquor, and

5) introducing into the bottom of the reactor a liquid flow comprising the mother liquor, at least a portion of the suspension removed at the end of its ascending motion and, optionally, water.

US 6,340,453 B1

METHOD FOR PRODUCING NICKEL HYDROXIDE

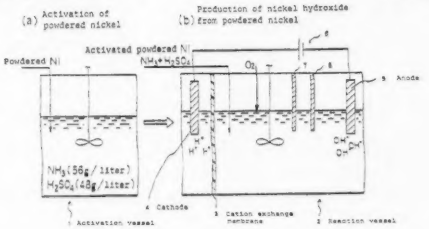
Kiyoshi Hayashi; Nobuyasu Morishita, and Munehisa Ikoma, all of Toyohashi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 11, 2000, Appl. No. 613,754

Claims priority, application Japan, Jul. 16, 1999, 11-203805

Int. Cl. C01G *53/00;* **C25B** *1/00*

U.S. Cl. 423—592 **3 Claims**



1. A method for producing nickel hydroxide, comprising the steps of: adding and dissolving a powdered nickel into an aqueous solution containing an ammonium ion; and controlling the pH of said aqueous solution by supplying a hydroxide ion generated by water electrolysis to produce nickel hydroxide in said aqueous solution.

US 6,340,454 B1

α-LITHIUM ALUMINATE AND METHOD OF MANUFACTURING THE SAME, AND ELECTROLYTE SUPPORT MATERIAL OF MOLTEN CARBONATE FUEL CELL

Yasuhiro Nakaoka; Nobuyuki Yamazaki, both of Tokyo, and Takenori Watanabe, Ichikawa, all of Japan, assignors to Nippon Chemical Industries Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1999, Appl. No. 472,830

Claims priority, application Japan, Dec. 28, 1998, 10-373300

Int. Cl. C01F *7/00;* **C01D** *15/00;* **H01M** *8/14*

U.S. Cl. 423—600 **9 Claims**

1. An α-lithium aluminate obtained through a solid-phase reaction of a γ-alumina and a lithium compound, wherein said α-lithium aluminate comprises particles having a round shape,

with a BET specific surface area in the range of 4–7 m^2/g, and wherein γ-lithium aluminate is not detectable by X-ray diffraction.

US 6,340,455 B1

TESTKIT AND METHOD

Leif Blomlöf, Lindingö; Sven Lindskog, Stockholm, and Olle Zetterström, Järfälla, all of Sweden, assignors to Peridoc AB, Stockholm, Sweden

PCT No. PCT/SE97/01949, § 371 Date Jun. 23, 1999, § 102(e) Date Jun. 23, 1999, PCT Pub. No. WO98/22147, PCT Pub. Date May 28, 1998

PCT Filed Nov. 20, 1997, Appl. No. 308,365

Claims priority, application Sweden, Nov. 22, 1996, 9604302

Int. Cl. A61B *10/00;* A61K *39/02*

U.S. Cl. 424—9.81 1 Claim

1. A method for determination of predisposition of an individual to develop marginal periodontitis comprising:

a) performing a screening test on said individual with a first reagent comprising a surface structure common to anaerobic Gram negative pathogens to elicit a reaction in the individual, wherein the first reagent is capable of triggering an inflammatory response associated with periodontitis and gingivitis in the individual; and

b) evaluating the reaction, lack of reaction or minor reaction of the individual to the first reagent of the screening test, indicating the predisposition of the individual to develop marginal periodontitis;

wherein step a) is accompanied by challenge with a negative control to confirm negative reaction;

wherein said first reagent comprises a structure selected from a non-carbohydrate entity of surface lipo- or proteoconjugates of said pathogens, wherein a second reagent is an agonist capable of producing an inflammatory response on challenge of said individual to confirm positive reaction selected from histamine, serotonin, prostaglandins, leukotrienes and bradykinin, and wherein said negative control is pyrogene free water; and

wherein said first reagent comprises Lipid A in a concentration within the range about 0.05 to about 2 mg/ml.

US 6,340,456 B1

USE OF A FLAVONOID EXTRACT OF GINKGO BILOBA SUBSTANTIALLY DEVOID OF TERPENES, IN THE DENTIBUCCAL FIELD, AND COMPOSITION CONTAINING SUCH EXTRACT

Joseph O'Reilly, Glounthaune, Ireland, assignor to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.), France

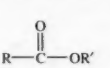
Division of application No. 09/284,125, filed as application No. PCT/FR97/01910, filed on Oct. 24, 1997, now Pat. No. 6,159,450. This application Jun. 23, 2000, Appl. No. 603,447.

Claims priority, application France, Oct. 25, 1996, 96 13065

Int. Cl. A01N *65/00;* A61K *35/78;7/16;7/26*

U.S. Cl. 424—48 10 Claims

1. A pharmaceutical composition intended for the treatment of the dentibuccal sphere and containing as active ingredient a sufficient amount of a flavonoid extract of ginkgo biloba leaves comprising 28 to 35% by weight of flavonoid glycosides and substantially free of terpenes, said extraction being several stages of extraction with solvents with one extraction being a deterpenation extract with a compound of the formula



wherein R and R' are independently lower alkyl optionally admixed with a saturated aliphatic hydrocarbon of at least 5 carbon atoms to treat affections thereof and an inert carrier.

US 6,340,457 B1

PHARMACEUTICAL AND ALIMENTARY COMPOSITIONS CONTAINING BACTERIA OF GENUS ACETOBACTER

Adriano Andriolli, and Fausto Panni, both of Milan, Italy, assignors to Farmilia Farmaceutici Milano S.R.L., Settimo Milanese, Italy

PCT No. PCT/EP98/00019, § 371 Date Aug. 2, 1999, § 102(e) Date Aug. 2, 1999, PCT Pub. No. WO98/30226, PCT Pub. Date Jul. 16, 1998

PCT Filed Jan. 5, 1998, Appl. No. 341,389

Claims priority, application Italy, Jan. 8, 1997, MI97A0013

Int. Cl. A61K *35/74;9/48;9/02*

U.S. Cl. 424—93.4 8 Claims

1. A method of treatment of gastroenteral pathologies, acute infections and impairment of gastroenteral function comprising the oral administration to a patient in need thereof of a pharmaceutical composition containing *Acetobacter xylinum* as the active ingredient.

US 6,340,458 B1

USE OF ENZYMES FOR SKIN EXPANSION

Reva Amir, and Abraham Amir, both of 2 Hashikma Street, Tel Mond 40600, Israel

Filed Nov. 19, 1999, Appl. No. 443,381

Int. Cl. A61K *38/48*

U.S. Cl. 424—94.64 26 Claims

1. A method for expanding healthy skin adjacent to an area which is to undergo reconstructive surgery, comprising administering to healthy skin adjacent to said area which is to undergo reconstructive surgery an efficacious amount of an enzyme which cleaves elastin fibers.

US 6,340,459 B1

THERAPEUTIC APPLICATIONS FOR THE ANTI-T-BAM (CD40-L) MONOCLONAL ANTIBODY 5C8 IN THE TREATMENT OF REPERFUSION INJURY IN NON-TRANSPLANT RECIPIENTS

Michael J. Yellin, Riverdale; Seth Lederman, New York, and Leonard Chess, Scarsdale, all of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation-in-part of application No. 08/567,391, filed on Dec. 1, 1995, now abandoned, and a continuation-in-part of application No. 08/566,258, filed on Dec. 1, 1995, now abandoned. This application Apr. 22, 1996, Appl. No. 637,323.

Int. Cl. A61K *39/395;* C07K *16/28;* G01N *33/53*

U.S. Cl. 424—154.1 23 Claims

1. A method for treating reperfusion injury in a subject other than a graft recipient, by inhibiting activation of cells bearing CD40 on their surface, other than B cells, comprising the step of administering to said subject an antibody, Fab, F(ab')2 or a single chain antibody, which binds specifically to an antigen specifically bound by monoclonal antibody 5c8, produced by the hybridoma having ATCC Accession No. HB 10916, wherein said antibody, Fab, F(ab')2 or single chain antibody, inhibits binding between CD40 ligand and CD40 on the surface of said cells, wherein said antibody, Fab, F(ab')2 or single chain antibody, is effective to inhibit transmigration of inflammatory cells across the barrier of endothelial cells in said subject .

US 6,340,460 B1

THERAPEUTIC SUPPRESSION OF SPECIFIC IMMUNE RESPONSE BY ADMINISTRATION OF OLIGOMERIC FORMS OF ANTIGEN OF CONTROLLED CHEMISTRY

Howard M. Dintzis, and Renee Z. Dintzis, both of 4413 Norwood Rd., Baltimore, Md. 21218

Continuation of application No. 08/391,267, filed on Feb. 21, 1995, now Pat. No. 6,022,544, which is a continuation of application No. 07/808,797, filed on Dec. 17, 1991, now abandoned, which is a continuation-in-part of application No. 07/628,858, filed on Dec. 17, 1990, now abandoned, which is a continuation-in-part of application No. 07/354,710, filed on May 22, 1989, now abandoned, which is a continuation-in-part of application No. 07/248,293, filed on Sep. 21, 1988, now Pat. No. 5,126,131, which is a continuation of application No. 06/869,808, filed on May 29, 1986, now abandoned, which is a continuation of application No. 06/460,266, filed on Jan. 24, 1983, now abandoned. This application May 12, 1995, Appl. No. 440,322.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *39/00;39/385*

U.S. Cl. 424—184.1 9 Claims

1. A method of making a non-immunogenic construct comprising at least two copies of an epitope of a T-dependent antigen bound to a pharmaceutically acceptable non-immunogenic carrier, which copies bind to a B cell membrane immunoglobulin receptor specific for the epitope but fail to form an immunon, comprising

(a) coupling two or more copies of said epitope to a nonimmunogenic soluble carrier to yield a conjugate preparation, and

(b) removing high molecular weight immunostimulatory molecules from the conjugate preparation, thereby yielding a construct which is free of high molecular weight immunostimulatory molecules.

US 6,340,461 B1

SUPERANTIGEN BASED METHODS AND COMPOSITIONS FOR TREATMENT OF DISEASES

David Stephen Terman, 3183 Palmero Way, Pebble Beach, Calif. 93953

Provisional application No. 60/033,172, filed on Dec. 17, 1996, Provisional application No. 60/044,074, filed on Apr. 17, 1997. This application Dec. 17, 1997, Appl. No. 992,877.

Int. Cl. A61K *39/385;39/00;39/39;45/00;* C12N *15/09;15/12;15/62;15/63*

U.S. Cl. 424—193.1 7 Claims

1. A pharmaceutical compound comprising a therapeutic antigen and superantigen, wherein said super antigen is conjugated to the therapeutic antigen and wherein the therapeutic antigen does not comprise an antigen binding region of an antibody.

6. A method of making an immunotherapeutic polymer, said method comprising the steps of mixing a plurality of first subunits with a plurality of second subunits, wherein the first subunits are superantigens and the second subunits are immunotherapeutic antigens that are tumor specific antigens, crosslinking the first and second subunits in random combination.

US 6,340,462 B1

RECOMBINANT AVIPOX VIRUS

Enzo Paoletti, Delmar, N.Y., assignor to Health Research, Inc., Albany, N.Y.

Division of application No. 07/918,278, filed on Jul. 22, 1992, now Pat. No. 5,505,941, which is a division of application No. 07/537,890, filed on Jun. 14, 1990, now Pat. No. 5,174,993, which is a continuation of application No. 07/234,390, filed on Aug. 23, 1988, now abandoned, which is a continuation-in-part of application No. 07/186,054, filed on Apr. 25, 1988, now abandoned, which is a continuation-in-part of application No. 07/110,335, filed on Oct. 20, 1987, now abandoned, which is a continuation-in-part of application No. 07/090,711, filed on Aug. 28, 1987, now abandoned, said application No. 07/537,890 is a continuation-in-part of application No. 07/090,209, filed on Aug. 27, 1987, now abandoned, which is a division of application No. 06/622,135, filed on Jun. 19, 1984, now Pat. No. 4,722,848, which is a continuation-in-part of application No. 06/446,824, filed on Dec. 8, 1982, which is a continuation-in-part of application No. 06/334,456, filed on Dec. 24, 1981, now Pat. No. 4,769,330. This application May 31, 1995, Appl. No. 455,345.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *39/275;39/285;35/76;* C12N *7/01*

U.S. Cl. 424—199.1 48 Claims

1. A recombinant vaccinia virus synthetically modified by the presence of DNA not naturally occurring in vaccinia virus including a poxvirus promoter for expression of said DNA, provided the poxvirus promoter is not the fowlpox virus thymidine kinase promoter.

2. A recombinant avipox virus, other than the NP strain of dovepox virus, containing therein DNA from a non-avipox source in a non-essential region of the avipox genome, wherein the virus further contains a promoter for expressing said DNA, and wherein the promoter is selected from the group consisting of vaccinia promoter, entomopox AmEPV 42K promoter and avipox promoter.

8. A recombinant avipox virus synthetically modified by the presence, in a non-essential region of the virus genome, of DNA not naturally occurring in the virus wherein the DNA comprises a poxvirus promoter, and provided the virus is not derived from the dovepox virus NP strain.

21. A method for expressing a gene product in a vertebrate host, which method comprises inoculating the host with a recombinant orthopox virus or avipox virus comprising DNA which codes for and expresses the gene product, wherein the host is not a natural host of the virus, such that there is expression without productive replication.

27. A method tor expressing a gene product in an avian, the method comprising:

inoculating the avian in ovum with a recombinant avipox virus that:

comprises DNA that encodes the gene product,

productively replicates in the avian, and

expresses the gene product in the avian,

whereby the avipox virus exprcsses the gene product.

US 6,340,463 B1

IDENTIFICATION OF ANTIGENIC PEPTIDE SEQUENCES

William M. Mitchell, and Charles W. Stratton, both of Nashville, Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Continuation-in-part of application No. 08/911,593, filed on Aug. 14, 1997, now abandoned, Provisional application No. 60/023,921, filed on Aug. 14, 1996. This application Feb. 18, 1998, Appl. No. 25,596.

Int. Cl. A61K *39/118;49/00;39/395;* C12N *1/00;* C07K *14/00*

U.S. Cl. 424—263.1 2 Claims

1. A substantially pure immunogenic polypeptide having a sequence consisting essentially of SEQ ID NO: 68 or a subse-

quence of SEQ ID NO: 68 that comprises amino acids 2 to 14 of SEQ ID NO: 97.

US 6,340,464 B1

ADJUVANTS FOR VACCINES

Luuk Hilgers, Utrecht, Netherlands, and Michel Strebelle, Brussels, Belgium, assignors to American Cyanamid Company, Madison, N.J.

PCT No. PCT/BE95/00118, § 371 Date Sep. 30, 1997, § 102(e) Date Sep. 30, 1997, PCT Pub. No. WO96/20007, PCT Pub. Date Jul. 4, 1996

PCT Filed Dec. 21, 1995, Appl. No. 860,456

Claims priority, application Belgium, Dec. 27, 1994, 09401173

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *45/00;47/00;47/32;47/30*

U.S. Cl. 424—280.1 **18 Claims**

1. An adjuvant for vaccines comprising an aqueous solution of a polymer having anionic constitutive repeating monomer units and hydrophobic constitutive repeating monomer units, characterized in that the monomer units to form the anionic constitutive repeating units are comprised of acrylic acid, and the monomer units to form the hydrophobic constitutive repeating units are selected from the group consisting of C_4–C_8 alkyl esters of acrylic acid wherein the concentration of said adjuvant in a vaccine is within the range of 1– 40 mg/mL of a vaccine.

US 6,340,465 B1

LUBRICIOUS COATINGS FOR MEDICAL DEVICES

Li-Chien Hsu, Mission Viejo, and Can B. Hu, Irvine, both of Calif., assignors to Edwards Lifesciences Corp., Irvine, Calif.

Filed Apr. 12, 1999, Appl. No. 290,501

Int. Cl. A61K *9/00;47/32;31/06*

U.S. Cl. 424—400 **16 Claims**

1. A stable, lubricious, biocompatible coating composition comprising a coupling agent, a polyfunctional polymer and at least one biocompatible agent, wherein said coupling and said polyfunctional polymer are in a ratio ranging from 10:1 to 0.1:1, and wherein said coupling agent and said polymer chemically interact to form a three-dimensional crosslinking network which is capable of physically entrapping said biocompatible agent.

US 6,340,466 B1

TRANSFER RESISTANT COSMETIC COMPOSITIONS

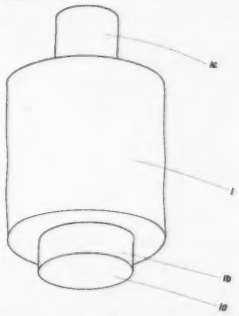
Lee Ellen Drechsler, Cincinnati, Ohio; Thomas Elliot Rabe, Baltimore, Md., and Edward Dewey Smith, III, Mason, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of application No. 09/277,485, filed on Mar. 26, 1999, now Pat. No. 6,074,654, which is a continuation of application No. 08/732,948, filed on Oct. 17, 1996, now Pat. No. 6,071,503, Provisional application No. 60/006,273, filed on Nov. 7, 1995, Provisional application No. 60/008,552, filed on Dec. 13, 1995. This application May 23, 2000, Appl. No. 576,841.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *6/00;7/00;7/025*

U.S. Cl. 424—401 **21 Claims**



1. A cosmetic composition for application to the lips, which composition comprises:

A) a mixture of:

(1) an organosiloxane resin; and

(2) a fluid diorganopolysiloxane polymer having a viscosity greater than 1,000,000 cSt at 25° C.;

wherein the ratio of (1) to (2) is from about 1:9 to about 20:1; and

B) a volatile carrier.

US 6,340,467 B1

SOLID AND SEMI-SOLID HYDROCARBON GELS AND USES THEREOF

David S. Morrison, The Woodlands, Tex., assignor to Pennzoil Products Company, Houston, Tex.

Provisional application No. 60/011,863, filed on Feb. 20, 1996. This application Feb. 19, 1997, Appl. No. 803,142.

Int. Cl. A01N *25/00*

U.S. Cl. 424—405 **18 Claims**

1. A solid or semi-solid hydrocarbon gel that does not run or drip at excessive body heat consisting essentially of:

a) a synthetic or natural solid or semi-solid hydrocarbon that is solid or semi-solid at about 25° C. selected from the group consisting of paraffin wax, petrolatum, mineral waxes, vegetable oil waxes, polyethylene waxes, microcrystalline waxes, carnauba, beeswax, and mixtures thereof; and said hydrocarbon having dissolved therein;

b) at least one block copolymer selected from the group consisting of:

a triblock copolymer;

a radial block copolymer

a multiblock copolymer;

a diblock copolymer; and

mixtures of these polymers;

wherein said hydrocarbon gel comprises from about 1% to about 50% by weight of said polymer, and a sufficient amount of said hydrocarbon to maintain the solid or semi-solid gel form, said amount containing from greater than 20% to about 95% by weight of solid or semi-solid hydrocarbon, and wherein said triblock copolymers are selected from the group consisting of linear ABA

block copolymers, styrene-butadiene-styrene(SBS) block copolymers, styrene-isoprene-styrene(SIS) block copolymers, and styrene-ethylenebutylene-styrene(S-EB-S) block copolymers, and said diblock copolymers are selected from the group consisting of styrene-ethylenepropylene(S-EP), styrene-ethylenebutylene(S-EB), styrene-butadiene(SB), and styrene-isoprene(SI) block copolymers, said gel firther optionally containing:

one or more additives selected from the groups consisting of:

1) functional ingredients containing about 0.1 to 10 weight percent of antioxidants, stabilizers, fragrances or colorants;

2) an effective amount of antibacterials, antibiotics, antifungals, antivirals, anesthetics, therapeutic ingredients or herbal products; and

3) an effective amount of vitamins, anti-oxidants, liquid or solid emollients, blood clotting agents, healing agents, adsorbents for wounds, or additives to prevent a bandage from sticking to the skin or a wound site;

wherein said gel will not run or drip during periods of excessive body heat, and said additives will not settle or separate out of the gel.

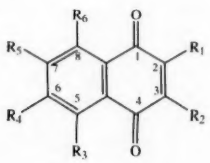
US 6,340,468 B1
METHOD OF CONTROLLING ZOOLOGICAL AND AQUATIC PLANT GROWTH

Horace G. Cutler, Watkinsville; Stephen J. Cutler, Roswell, both of Ga.; David Wright, Solomons, and Rodger Dawson, Owings, both of Md., assignors to Garnett, Inc., Watkinsville, Ga.

Filed Feb. 17, 2000, Appl. No. 506,017
Int. Cl. A01N *25/00;35/00*
U.S. Cl. 424—405 **25 Claims**

1. A method of killing a target aquatic pest selected from the group consisting of viruses, protists, fungi, molds, plants, holoplanktonic organisms, meroplanktonic organisms, demersal organisms, benthic organisms, detached or floating biota, bacteria whether or not encysted, protozoans, algae, pyrrophyta, cryptophyta, chrysophyta, porifera, platyhelminthes, pseudocoelomates, anelid worms, mollusks, bivalves, crustaceans, larval-adult forms of copepods, ostracods, mysids, gammarids, larval forms of decapods, and larval teleost fish in water infested with said target aquatic pest, said method comprising the step of:

applying to water infested with said target aquatic pest an amount that is elective to kill said target aquatic pest of a naphthalenedione compound which has the chemical structure of:



wherein:

R_1 is hydrogen or methyl,

R_2 is hydrogen, methyl, sodium bisulfate, chloro, acetonyl, 3-methyl-2-butenyl or 2-oxypropyl;

R_3 is hydrogen, methyl, chloro, methoxy, or 3-methyl-2-butenyl;

R_4 is hydrogen or methoxy;

R_5 is hydrogen or methyl;

R_6 is hydrogen.

US 6,340,469 B1
SYSTEM FOR PROPHYLACTIC TREATMENT OF MAMMARY DISORDERS

Vincent McNally, Sandyford, and James Patrick Morgan, deceased, late of Bellinter, both of Ireland, by Bridie Morgan, legal representative, assignors to Bimeda Research and Development LTD, Ireland

Continuation of application No. 09/319,544, filed on Aug. 10, 1999, now Pat. No. 6,254,881. This application Oct. 24, 2000, Appl. No. 694,676.
Claims priority, application Ireland, Dec. 18, 1996, 960896
Int. Cl. A23K *1//18*
U.S. Cl. 424—438 **8 Claims**

1. A system for forming an anti infective-free physical barrier in the teat canal of a non-human animal for prophylactic treatment of mammary disorders during the animal's dry period, said system consisting essentially of an anti infective-free seal formulation and an injector tube for infusing the seal formulation into the teat of the animal.

US 6,340,470 B1
SOLUBLE ISOFLAVONE COMPOSITION AND METHOD FOR PREPARING THE SAME

Koji Tsukuda, Kishiwada, Japan, assignor to Matsutani Chemical Industries Co., Ltd., Hyogo-ken, Japan

Filed Dec. 29, 1999, Appl. No. 474,807
Claims priority, application Japan, May 17, 1999, 11-136226
Int. Cl. A61K *47/00;6/00;7/00*
U.S. Cl. 424—439 **10 Claims**

1. A soluble isoflavone composition comprising isoflavone and a solubilizing agent consisting of (i) octenyl succinate-treated starch or (ii) a mixture of anhydrous or water-containing propylene glycol and octenyl succinate-treated starch.

US 6,340,471 B1
METHOD FOR PREPARING SOLID DELIVERY SYSTEM FOR ENCAPSULATED AND NON-ENCAPSULATED PHARMACEUTICALS

Alvin Kershman, 5032 Oakbluff Dr., Paradise Valley, Mo. 63049, and Jeff L. Shear, 1421 Wildhorse Parkway Dr., Chesterfield, Mo. 63005

Filed Dec. 30, 1999, Appl. No. 476,483
Int. Cl. A61K *9/16;9/20*
U.S. Cl. 424—439 **14 Claims**

1. A method for preparing a drug delivery system for transporting drug active particles for ingestion by a subject recipient, said delivery system comprising a suspension comprising a lipid source in which said particles and other dry solids are homogeneously suspended, said method comprising the steps of:

microencapsulating said drug particles by granulating with a filming agent,

melting said lipid source to a liquid state,

adding a surfactant to said melted lipid source to enhance coating of said lipid source,

mixing said dry solids and said microencapsulated drug particles within said melted liquid lipid source until said suspension is formed such that said dry solids and said microencapsulated drug particles are continuously coated by said lipid source such that said suspension exhibits pseudoplastic and/or thixotropic properties, and molding said suspension into an oral dosage form for swallowing or chewing.

US 6,340,472 B1

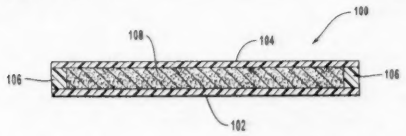
METHOD FOR REDUCING ONSET TIME OF PHARMACEUTICALLY ACTIVE COMPOUNDS

Jie Zhang, and Hao Zhang, both of Salt Lake City, Utah, assignors to Zars, Inc., Salt Lake City, Utah

Division of application No. 09/162,890, filed on Sep. 29, 1998, now Pat. No. 6,245,347, which is a continuation-in-part of application No. 08/819,880, filed on Mar. 18, 1997, now Pat. No. 5,919,479, which is a division of application No. 08/508,463, filed on Jul. 28, 1995, now Pat. No. 5,658,583. This application Apr. 7, 2000, Appl. No. 545,495. This patent is subject to a terminal disclaimer.

Int. Cl. A61K *9/70*

U.S. Cl. 424—448 **42 Claims**



1. A method of reducing an onset time of the effect of a drug in a target area of a human body comprising:

administering a drug to a portion if said human body;

applying a temperature of modification apparatus proximate said drug being administered, said temperature modification apparatus capable of generating controlled heat by exposing an oxygen activated exothermic medium within the apparatus to oxygen and varying the amount of oxygen to which the exothermic medium is exposed to vary a rate of reaction of the exothermic medium; and

adjusting the temperature of skin proximate said portion of said human body with said temperature modification apparatus to achieve said reduces onset time of said drug in said targeted area.

US 6,340,473 B1

FILM FORMING COMPOSITIONS COMPRISING MODIFIED STARCHES AND IOTA-CARRAGEENAN AND METHODS FOR MANUFACTURING SOFT CAPSULES USING SAME

Keith Edward Tanner, Safety Harbor, Fla.; Peter Robert Draper, LaSalle, Canada; John J. Getz, Delray Beach, Fla.; Stephen W. Burnett, Clearwater, Fla., and Elizabeth Youngblood, Valrico, Fla., assignors to R.P. Scherer Technologies, Inc., Paradise Valley, Nev.

Provisional application No. 60/142,704, filed on Jul. 7, 1999. This application Jun. 30, 2000, Appl. No. 608,853.

Int. Cl. A61K *9/48*

U.S. Cl. 424—451 **2 Claims**

1. An edible, soft capsule which comprises a soft, dry shell which comprises:

(v) about 12–24 weight % iota-carrageenan;

(vi) about 30–60 weight % modified starch;

(vii) about 10–60 weight % plasticizer;

(viii) about 1–4 weight % sodium phosphate dibasic buffer system; and

wherein said shell encloses a soft capsule fill material.

US 6,340,474 B1

COMPOSITION FOR POTENTIATING A GROWTH HORMONE AND A METHOD FOR PREPARATION OF SAID COMPOSITION

Charles A. Mesko, P.O. Box 608, Millersport, Ohio 43046

Filed Aug. 3, 1999, Appl. No. 366,454

Int. Cl. A61K *9/20;9/22;9/28;47/00;* **A01N** *25/00*

U.S. Cl. 424—464 **27 Claims**

1. A pharmaceutically acceptable growth hormone-potentiating composition for ingestion in a mammal comprising:

Mucuna pruriens including an element for synthesizing a catecholamine;

Tribulus L. terrestris having an active component comprising a luteinizing agent; and

a protective coating operable for retarding acidic degradation of said *Mucuna pruriens* and said *Tribulus L. terrestris* prior to absorption by said mammal.

US 6,340,475 B2

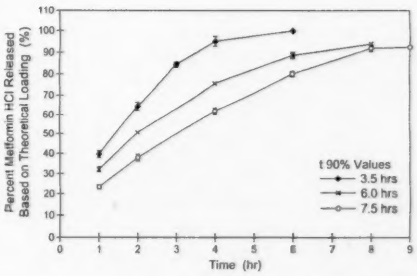
EXTENDING THE DURATION OF DRUG RELEASE WITHIN THE STOMACH DURING THE FED MODE

John W. Shell, Hillsborough; Jenny Louie-Helm, Union City, and Micheline Markey, Santa Cruz, all of Calif., assignors to DepoMed, Inc., Menlo Park, Calif.

Continuation-in-part of application No. 08/870,509, filed on Jun. 6, 1997, now abandoned. This application Mar. 29, 1999, Appl. No. 282,233. This patent is subject to a terminal disclaimer.

Int. Cl. A61K *9/26;9/14*

U.S. Cl. 424—469 **89 Claims**



1. A controlled-release oral drug dosage form for releasing a drug whose solubility in water is greater than one part by weight of said drug in ten parts by weight of water, said dosage form comprising a solid polymeric matrix with said drug dispersed therein at a weight ratio of drug to polymer of from about 15:85 to about 80:20, said polymeric matrix being one that swells upon imbibition of water thereby attaining a size large enough to promote retention in the stomach during said fed mode, that releases said drug into gastric fluid by the dissolution and diffusion of said drug out of said matrix by said gastric fluid, that upon immersion in gastric fluid retains at least about 40% of said drug one hour after such immersion and releases substantially all of said drug within about eight hours after such immersion, and that remains substantially intact until all of said drug is released.

US 6,340,476 B1

PHARMACEUTICAL DOSAGE FORM FOR PULSATILE DELIVERY OF METHYLPHENIDATE

Kamal K. Midha, Hamilton, Bermuda; Theodore L. Iorio, Millis, and Shubha Chungi, Sharon, both of Mass., assignors to Armaquest, Inc., Hamilton, Bermuda

Provisional application No. 60/127,984, filed on Apr. 6, 1999. This application Apr. 6, 2000, Appl. No. 544,732.

Int. Cl. A61K *9/26*

U.S. Cl. 424—469 **56 Claims**

1. A pulsatile release dosage form for oral administration of methylphenidate, comprising:

(a) a first dosage unit comprising a first methylphenidate dose that is released substantially immediately following oral administration of the dosage form to a patient;

(b) a second dosage unit comprising a second methylphenidate dose and a means for delaying release of the second dose until approximately 3 to 5 hours following administration of the dosage form to a patient; and optionally

(c) a third dosage unit comprising a third methylphenidate dose and a means for delaying release of the third dose until approximately 7 to 9 hours following oral administration of the dosage form to a patient.

US 6,340,477 B1

BONE MATRIX COMPOSITION AND METHODS FOR MAKING AND USING SAME

Billy G. Anderson, Virginia Beach, Va., assignor to LifeNet, Va Beach, Va.

Filed Apr. 27, 2000, Appl. No. 559,281

Int. Cl. A61K *9/14;35/32;* **A61F** *2/00;13/00*

U.S. Cl. 424—488 **44 Claims**

1. A bone matrix composition, consisting essentially of: one or more non-liquid members selected from the group consisting of: methyl cellulose, carboxy methyl cellulose, hydroxy propyl cellulose, and hydroxy ethyl cellulose; particulate bone; and water.

US 6,340,478 B1

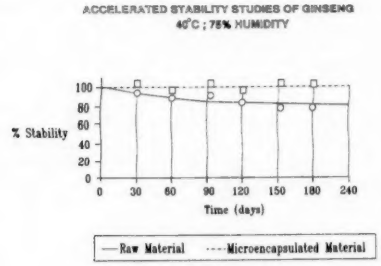
MICROENCAPSULATED AND CONTROLLED-RELEASE HERBAL FORMULATIONS

Yoav Blatt; Eugene Kimmelman, both of Rehovot; David Cohen, Petach Tikva, and Avner Rotman, Rehovot, all of Israel, assignors to Bio Dar Ltd., Yavne, Israel

Filed Jun. 7, 1999, Appl. No. 327,752

Int. Cl. A61K *35/78;9/14;9/16;9/48;9/20*

U.S. Cl. 424—489 **15 Claims**



1. An orally-administrable formulation for the controlled release of a granulated herb comprising a microencapsulated granulated herb having an active ingredient selected from the group consisting of hypericin, hyperforine and echinosides and at least one carrier, adjuvant or excipient therefor, characterized in that the total in vitro dissolution time of said formulation required for release of 75% of the active ingredients available from said formulation is between about 4 and about 18 hours, as determined by the U.S.P. XXIII paddle method at a paddle speed of 150 rpm, using simulated intestinal fluid without the digestive enzymes normally found in intestinal fluid, containing 0.1% w/w sodium dodecyl sulfate at pH 6.8 and a temperature of 37° C.

US 6,340,479 B1

STABLE, HOMOGENEOUS, EXTRACT FREE OR NEARLY FREE FORM SECONDARY REACTION PRODUCTS

Matthias H. Kreuter, Walenstadt, and Rudolf Steiner, Bäch, both of Switzerland, assignors to Emil Flachsmann AG, Switzerland

Division of application No. 08/922,398, filed on Sep. 3, 1997, now Pat. No. 6,207,164. This application Nov. 28, 2000, Appl. No. 722,618.

Claims priority, application Switzerland, Sep. 3, 1996, 2166/96

Int. Cl. A61K *35/78*

U.S. Cl. 424—725 **38 Claims**

1. A stable, homogeneous extract of plants or parts thereof which is substantially free of secondary reaction products, contains a native compound mixture, contains at least one agent, and is in a liquid, semisolid or solid form, or is dissolved and/or suspended and/or emulsified in at least one solvent,

wherein said agent:

(i) increases the solubility of at least one extracted compound contained in the extract;

(ii) increases the viscosity of the extract in the presence of the solvent(s);

(iii) decreases the steam pressure of volatile extracted compounds contained in the extract;

(iv) prevents or reduces the chemical and/or enzymatic reactions between one or more extracted compounds contained in the extract;

(v) prevents or reduces the sedimentation and/or flotation of extracted compounds contained in the extract when the extract is in liquid or semisolid form or is dissolved and/or suspended and/or emulsified in at least one solvent; and

(vi) increases the stability and/or homogeneity of at least one extracted compound contained in the extract;

wherein said extract is prepared by a process comprising mixing plants or plant parts charged in a fresh and/or dried state with at least one solvent and at least one agent and extracting the plants or plant parts with the solvent and agent, and thereafter filtering insoluble compounds so as to obtain a filtrate;

wherein said filtrate is substantially free of secondary reaction products and contains a native compound mixture; and

wherein said filtrate is concentrated to a spissum extract and the pressure used for the concentration is adjusted according to the vapor pressure of the solvent(s), and optionally the spissum extract is dried to obtain a dry extract which is in a solid state of aggregation at a temperature below 60° C., or the spissum extract is mixed with at least one pharmaceutically acceptable solvent so that a preparation is obtained which is in a liquid state of aggregation at a temperature of below 50° C.

US 6,340,480 B1

NATURAL COMPOSITION FOR THE TREATMENT OF CIRCULATORY CONDITIONS

Melvin J. Duckett, 10300 Cedar Grave Rd., Sparks, Md. 21152, and Kyle Moore, 4705 Creekside Cir., Apt. 13, Owings Mills, Md. 21117

Continuation-in-part of application No. 09/255,587, filed on Feb. 22, 1999, now Pat. No. 6,007,824, Provisional application No. 60/092,143, filed on Jul. 9, 1998. This application Dec. 28, 1999, Appl. No. 473,105.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *35/78*

U.S. Cl. 424—728 **20 Claims**

1. A composition for promoting circulation, comprising an effective amount of L-arginine, ginseng and *Ziyphi fructus*, said constituents being administered to stimulate release of NO in the body.

US 6,340,481 B1

REGULATION OF ATHLETIC FUNCTION WITH MATERIALS DERIVED FROM CITRUS VARIETIES

Dennis Jones, Chelburne, Vt., assignor to Zhishin, LLC, South Burlington, Vt.

Division of application No. 09/142,197, filed as application No. PCT/US96/16213, filed on Sep. 30, 1996, now Pat. No. 6,224,823. This application May 18, 2000, Appl. No. 573,321.

Int. Cl. A61K *35/78;31/24;31/135;47/00*

U.S. Cl. 424—736 **16 Claims**

1. A method for enhancing physical performance in a human, which comprises administering by mouth to a human a composition containing at least one adrenergic amine or amines selected from the group consisting of synephrine, hordenine, octopamine, tyramine and N-methyltyramine.

US 6,340,482 B1

METHODS FOR INDUCING WEIGHT LOSS IN A HUMAN WITH MATERIALS DERIVED FROM CITRUS VARIETIES

Dennis Jones, Shelburne, Vt., assignor to ZhiShin, LLC, South Burlington, Vt.

Continuation of application No. 09/142,197, filed as application No. PCT/US96/16213, filed on Sep. 30, 1996, now Pat. No. 6,224,873. This application May 18, 2000, Appl. No. 573,324.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *35/78;31/24;31/16;31/135;47/00*

U.S. Cl. 424—736 **16 Claims**

1. A method for inducing weight loss in a human by suppressing hunger, which comprises administering by mouth to a human a composition containing at least one adrenergic amine or amines selected from the group consisting of synephrine, hordenine, octopamine, tyramine and N-methyltyramine.

US 6,340,483 B1

ANTIVIRAL COMPOSITION DERIVED FROM ALLIUM CEPA AND THERAPEUTIC USE THEREOF

Adolfo Goren, Cordoba, Argentina; Walter Franklin Goldman, Houston, Tex.; Zila Trainin, Rehovot, Israel, and Simon Raul Goldman, Cordoba, Argentina, assignors to Diepon, S.A., Montevideo, Uruguay

Filed Aug. 3, 2000, Appl. No. 631,284

Int. Cl. A61K *35/78*

U.S. Cl. 424—754 **7 Claims**

1. A method for treating HIV-positive or AIDS patients comprising orally administering an amount of a dehydrated particulate *Allium cepa* plant material that is processed to provide particles wherein the majority have an average particle size ranging from about 36 to 500 microns, and wherein said dehydrated, particulate plant material is orally administered in an amount to reduce at least one of the clinical symptoms associated with HIV positive or AIDS patients, and further wherein dehydration is effected by heating;

wherein said clinical symptoms are selected from the group consisting of paresthesia, wasting syndrome, intestinal colic, diarrhea and polyadenopathy.

US 6,340,484 B1

COMPOSITIONS CONTAINING NEEM SEED EXTRACTS AND SACCHARIDE

Sreenivasa Rao Damarla, Kalyananagar; Srinivasa Sridhar, and Mambully Chandrasekaran Gopinathan, both of Bangalore, all of India, assignors to E.I.D. Parry (India) Limited, Bangalore, India

Filed Apr. 7, 2000, Appl. No. 545,295

Int. Cl. A61K *7/00;31/70;* **A01N** *25/00;43/16;43/04*

U.S. Cl. 424—761 **18 Claims**

1. A solid pesticide composition comprising at least one saccharide and a neem seed extract, wherein said neem seed extract comprises azadirachtin, wherein said composition is a free flowing powder, and wherein said saccharide and said neem seed extract are not chemically bonded.

US 6,340,485 B1

COMPOSITIONS AND USES THEREOF

Keith Coupland, Hotham, and Claire Elizabeth Packer, Bessacarr, both of United Kingdom, assignors to Croda International PLC, North Humberside, United Kingdom

Continuation-in-part of application No. 09/308,927, filed on May 27, 1999, now abandoned, which is a continuation-in-part of application No. 09/308,928, filed on May 27, 1999, now abandoned. This application Mar. 13, 2000, Appl. No. 523,731.

Claims priority, application United Kingdom, Jun. 3, 1996, 9611529; Jun. 3, 1996, 9611530; Jun. 3, 1996, 9611531

Int. Cl. A61K *35/78;31/20;* **A01N** *37/00;37/12*

U.S. Cl. 424—776 **32 Claims**

1. A composition comprising in the range of from 1 to 20% by weight of the total composition of an oil extracted from the seeds of Boraginaceae, which oil comprises in the range of from 5 to 20% stearidonic acid triglyceride and 80 to 95% of other fatty acid triglycerides, by weight of the total fatty acids in the oil extract, which stearidonic acid triglyceride or other fatty acid triglyceride(s) may optionally have been converted to an ester thereof, and optionally a physiologically acceptable carrier therefor.

US 6,340,486 B1

AQUEOUS L-LYSINE-CONTAINING ANIMAL FEED SUPPLEMENTS AND PROCESS FOR THE PRODUCTION THEREOF

Michael Binder, Steinhagen, and Klaus-Erich Uffmann, Bielefeld, both of Germany, assignors to Degussa-Huls Aktiengesellschaft, Hanau, Germany

Provisional application No. 60/140,449, filed on Jun. 23, 1999. This application Jun. 23, 2000, Appl. No. 599,644.

Int. Cl. A23J *3/20;* **A23K** *1/00*

U.S. Cl. 426—2 **8 Claims**

1. An animal feed supplement derived from the fermentation broth of Coryneform bacteria, comprising:

(a) L-lysine or salts of L-lysine at a concentration of 18–35 weight percent (as lysine base);

(b) from 0–100% of the biomass formed during the fermentation of said Coryneform bacteria; and

(c) greater than 50% of the other dissolved and suspended constituents of said fermentation broth;

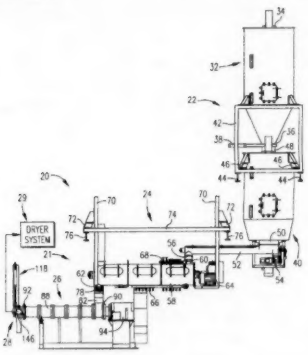
and wherein said animal feed supplement is in the form of an aqueous composition at a pH of 2.5 to 4.

US 6,340,487 B1

MULTIPLE PURPOSE QUICK-CHANGEOVER EXTRUSION SYSTEM

Lavon G. Wenger, and Bobbie W. Hauck, both of Sabetha, Kans., assignors to Wenger Manufacturing, Inc., Sabetha, Kans.

Filed Mar. 28, 2000, Appl. No. 536,893
Int. Cl. A23P *1/00;* **B01F** *7/00;* **B29C** *47/00*
U.S. Cl. 426—231 **41 Claims**



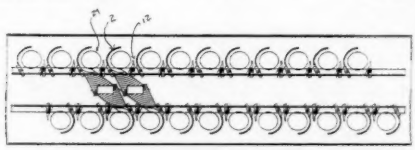
37. In a method of operating an extrusion system having a preconditioner having an inlet and an outlet and an extruder coupled with said outlet to receive preconditioned material from the outlet, including the steps of continuously operating the preconditioner and extruder to process material passes serially through the preconditioner and extruder, the improvement comprising the steps of varying the residence time of said material within the preconditioner during said continuous operation of the preconditioner and extruder, said residence time varying step comprising the steps of continuously weighing said preconditioner and varying the mass flow rate of material passing into said preconditioner inlet while maintaining the mass flow rate of material leaving the preconditioner outlet at a level to effect said change of the residence time.

US 6,340,488 B1

METHOD FOR MAKING LACED APPEARING CONFECTIONERIES

William French; Edward Morris Kuehl, both of Dublin, and Kurt A. Busse, Radnor, all of Ohio, assignors to Nestec S.A., Vevey, Switzerland

Continuation-in-part of application No. 09/145,739, filed on Sep. 2, 1998, now Pat. No. 6,267,073, which is a continuation-in-part of application No. 08/986,185, filed on Dec. 5, 1997, now Pat. No. 6,194,014, which is a continuation-in-part of application No. 08/901,727, filed on Jul. 28, 1997, now abandoned, which is a continuation-in-part of application No. 08/771,788, filed on Dec. 20, 1996, now abandoned. This application Feb. 1, 2000, Appl. No. 495,449.
Int. Cl. A23G *3/00;* **B05C** *5/00*
U.S. Cl. 426—302 **28 Claims**



1. A method for preparing a confectionery having a coating with stripes comprising supplying liquid coating material to a rotatable applicator; rotating the applicator to generate stripes of liquid coating material; and shielding the applicator as the confectionery moves along a production line to assist in directing the stripes of coating material onto the confectionery.

US 6,340,489 B1

MANUFACTURING PROCESS OF CARROT JUICE

Yuko Suzuki; Akio Sugimoto; Takami Kakuda, and Yasuhiko Ikegawa, all of Shizuoka, Japan, assignors to Ito En, Ltd., Tokyo, Japan

Filed Nov. 29, 1999, Appl. No. 449,530
Int. Cl. A23L *2/02;2/42*
U.S. Cl. 426—489 **7 Claims**

1. A manufacturing process of carrot juice for elimination of cohesion, comprising the steps of:

peeling raw carrot,

blanching the carrot until an internal temperature reaches 70 to 80° C. in water at 70 to 80° C. within one day after peeling whereby pectin esterase activity of the carrot is completely deactivated, and

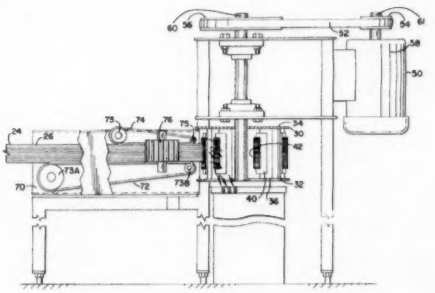
thereafter crushing and squeezing said blanched carrot, the process further comprising carrying out additional enzyme deactivation processing so that a residual rate of pectinase activity is less than 60% and greater than 29%.

US 6,340,490 B1

APPARATUS AND METHOD FOR SHREDDING BLOCKS OF CHEESE

Shawn Owens, Joplin, Mo., assignor to Schreiber Foods, Inc., Green Bay, Wis.

Filed Feb. 14, 2000, Appl. No. 492,102
Int. Cl. B02C *13/00;18/00*
U.S. Cl. 426—518 **16 Claims**



1. A method for shredding a block of cheese having a height, a width and a front face defined by the most downstream cross-section of the height and the width, the method comprising:

stacking a plurality of ribbons of cheese on top of each other to form a block of cheese;

placing the block of cheese on a feed belt;

moving the block of cheese on a feed plane and in a feed direction toward a shredding unit, the shredding unit having at least one cutting blade; and

moving the cutting blade across the front face of the block about an axis generally perpendicular to the feed direction to form shreds of cheese.

US 6,340,491 B1

FREE FLOWING FAT COMPOSITIONS

Frederick William Cain; Willem Dekker, both of Wormerveer, Netherlands, and Stephen Raymond Moore, Sharnbrook, United Kingdom, assignors to Loders Croklaan B.V., Wormerveer, Netherlands

Continuation of application No. 09/155,991, filed as application No. PCT/EP97/00829, filed on Feb. 19, 1997, now Pat. No. 6,165,518. This application Nov. 6, 2000, Appl. No. 705,865.

Claims priority, application European Pat. Off., Apr. 11, 1996, 96302539

This patent is subject to a terminal disclaimer.

Int. Cl. A23D *9/00*

U.S. Cl. 426—554 **15 Claims**

1. Free flowing fat composition comprising:

(i) a fat blend of fats (A) and (B) in a weight ratio of 90:10 to 10:90 and

(ii) 2.5–90 wt % of a filler material wherein fat A is a fat with at least 0.5 wt % of long chain polyunsaturated fatty acids and fat B is a hard fat, so that N_{30} (unstab) of the blend +% filler in composition is at least 70.

US 6,340,492 B1

FOOD PRODUCTS SUITABLE FOR FRYING AFTER REHYDRATION AND PROCESS FOR THEIR PRODUCTION

Horst Klukowski, Neuenstadt-Kochertürn, and Peter Vermeiden, Heilbronn, both of Germany, assignors to Bestfoods, Englewood Cliffs, N.J.

Filed Mar. 23, 2000, Appl. No. 533,708

Int. Cl. A21C *11/16;* **A23P** *1/10;* **A21D** *13/00*

U.S. Cl. 426—557 **19 Claims**

1. A process for the production of preshaped, rehydratable, dried food products suited for pan-frying comprising

premixing 50–70% by weight grits, 5–20% by weight coagulable protein, a raising agent, salt and spices, and then adding 5–25% by weight liquified fat wherein the liquified fat coats at least the grits,

adding a liquid and mixing and kneading to prepare a plastic sliceable wet dough,

portioning the plastic sliceable wet dough and forming it into a desired shape to make dough pieces,

subjecting the dough pieces to a thermal treatment at a temperature from 90–160° C. for 8–30 minutes to develop a protein framework,

and the dough pieces thus treated are then dried to a residual water content of 4–10% by weight wherein the dried food product has a density of at least 0.6 g/cm^3.

US 6,340,493 B1

JUICES INCORPORATING EARLY SEASON ORANGE CULTIVARS AND METHOD OF MAKING

James H. Keithly, Bradenton; Harold Pollack, St. Petersburg, and Thomas Taggart, Bradenton, all of Fla., assignors to Tropicana Products, Inc., Bradenton, Fla.

Continuation-in-part of application No. 09/311,956, filed on May 14, 1999, now Pat. No. 6,143,347. This application Apr. 7, 2000, Appl. No. 545,397.

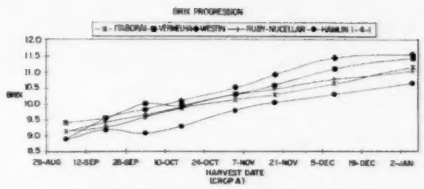
This patent is subject to a terminal disclaimer.

Int. Cl. A23L *2/02*

U.S. Cl. 426—599 **63 Claims**

1. A method of preparing early season not from concentrate orange juice, comprising the steps of:

harvesting a very early season orange cultivar having juice with early season color of greater intensity than Hamlin orange juice while also exhibiting sensory qualities superior to the sensory qualities of Hamlin orange juice, said harvesting step including selecting a cultivar within the Seleta family of



cultivars, a Westin cultivar, a Ruby Nucellar cultivar, or a combination of these very early season cultivars;

extracting juice from a volume of said very early season oranges of said harvesting step;

collecting the resulting extracted orange juice as an early season orange juice having a Color Number of at least 33 CN units; and

blending at least about 5 volume percent, based on the total volume of the orange juice, of said extracted early season orange juice with another orange juice source in order to provide a not from concentrate orange juice product having an enhanced sensory profile and a Color Number in excess of 33 CN units.

US 6,340,494 B1

DRY PRODUCT WHICH CAN BE RECONSTITUTED WITH HOT AQUEOUS LIQUIDS AND PROCESS FOR ITS PRODUCTION

Horst Klukowski, Neuenstadt-Kocherturn; Rolf Stute, Remseck, and Gerhard Speth, Heilbronn, all of Germany, assignors to Bestfoods, Englewood Cliffs, N.J.

Filed May 8, 2000, Appl. No. 567,170

Int. Cl. A23L *1/0522;1/212*

U.S. Cl. 426—640 **16 Claims**

1. Process for producing dry products which can be reconstituted with cold and hot aqueous liquids to form fruit pulps and vegetable pulps by roller drying of fruit concentrates and vegetable concentrates containing external starch, wherein flakes obtained by comminution after the roller drying are agglomerated using the fruit concentrates and vegetable concentrates and the resulting agglomerate is subjected to a heat-moisture treatment and simultaneously dried to the desired final water content.

US 6,340,495 B1

DEVICE INCLUDING A CHROMOPHORIC COMPOSITION TO BE APPLIED TO THE SKIN, A METHOD OF FABRICATING SUCH A DEVICE, AND USES THEREFOR

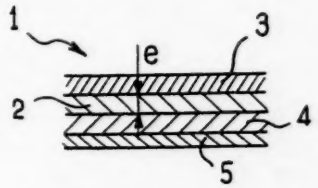
Chryslain Sumian; Franck Pitre, both of Antibes, and Serge Mordon, Villeneuve d'Ascq, all of France, assignors to Galderma Research & Development, Valbonne, France

Filed Dec. 9, 1998, Appl. No. 207,267

Claims priority, application France, Dec. 16, 1997, 97 15953

Int. Cl. A61B *5/103;* **C08F** *2/48;* **C08J** *7/04*

U.S. Cl. 427—1 **23 Claims**



1. A device making it possible to apply a chromophoric composition to skin, said device comprising a chromophoric composition containing at least one chromophoric agent, wherein the chro-

mophoric composition is in the form of a layer having a constant thickness and is bonded to one face of a backing, at least prior to being applied to the skin, the at least one chromophoric agent being distributed uniformly in said composition, and the composition being chosen such that after application to the skin light energy from laser irradiation of the composition at least one of a) is transformed locally into heat and b) locally modifies the chemical structure of the at least one chromophoric agent in the composition.

US 6,340,496 B1
METHOD FOR PATTERNING A LAYER OF CONDUCTIVE POLYMERS

Tom Cloots, Londerzeel; Roger Van den Bogaert, Schoten; Jean-Pierre Tahon, Langdorp, and Frank Louwet, Diepenbeek, all of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Provisional application No. 60/137,275, filed on Jun. 1, 1999. This application May 19, 2000, Appl. No. 573,549.
Claims priority, application European Pat. Off., May 20, 1999, 99201645
Int. Cl. B05D *5/12*
U.S. Cl. 427—58 **7 Claims**

1. A method for producing electrode pattern in a conductive polymer on a substrate comprising the steps of

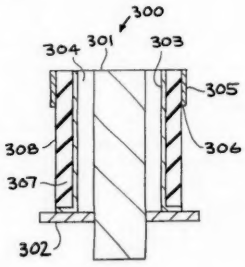
applying a layer containing between 10 and 5000 mg/m^2 of a conductive polymer, so as to prepare a conductive layer and

printing an electrode pattern on said layer using a printing solution containing of an oxidant selected from the group consisting of ClO^-, BrO^-, MnO_4^-, $Cr_2O_7^{--}$, $S_2O_8^{--}$ and H_2O_2.

US 6,340,497 B2
METHOD FOR IMPROVING PERFORMANCE OF HIGHLY STRESSED ELECTRICAL INSULATING STRUCTURES

Michael J. Wilson, Modesto, and David A. Goerz, Brentwood, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Provisional application No. 60/051,518, filed on Jul. 2, 1997. This application Jul. 2, 1998, Appl. No. 109,787.
Int. Cl. B05D *5/12;7/22*
U.S. Cl. 427—123 **11 Claims**



1. A method for eliminating formation of an electric field from any dielectric/metal interface of high-voltage interconnects, comprising:

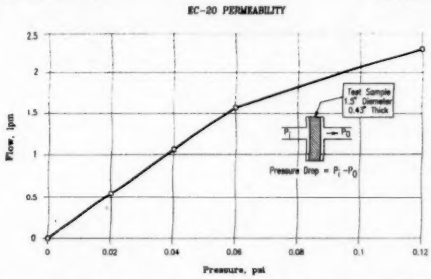
providing an interconnect having at least one longitudinally extending electrode and a solid longitudinally extending dielectric insulator surrounding and spaced from the electrode, and

providing a longitudinally extending conductive surface on an inside surface of the solid dielectric insulator and in a spaced from and directly adjacent relation to said electrode by depositing conductive material on the inside surface of the solid dielectric insulator to a thickness in the range of atomic level of the material to one millimeter.

US 6,340,498 B2
POROUS COMPOSITION FOR USE IN AN ENVIRONMENT OF VARIABLE PRESSURE AND/OR VARIABLE TEMPERATURE

John Stephen Kirby, Laguna Beach, and John Miles Watcher, Laguna Hills, both of Calif., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 14, 1999, Appl. No. 418,062
Int. Cl. B05D *7/00*
U.S. Cl. 427—220 **15 Claims**



13. A method of forming a porous coating on a substrate for use in an environment of variable pressure and/or variable temperature, comprising the steps of:

preparing a binder, said binder being curable in a temperature range of 50° F. to 90° F.;

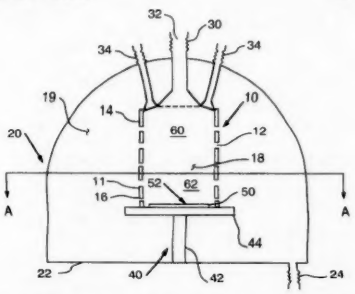
mixing a particle material with said binder wherein the resultant mixture has a 50 to 90 volume percent of said particle material, the resulting porous composition being intrinsically permeable, the permeability being at least about 40 liters/min/psi/in for pressure differentials up to 0.12 psi; and,

applying the resultant mixture to a substrate.

US 6,340,499 B1
METHOD TO INCREASE GAS RESIDENCE TIME IN A REACTOR

Gurtej S. Sandhu; Ravi Iyer, and Sujit Sharan, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of application No. 08/950,549, filed on Oct. 15, 1997, now Pat. No. 5,935,336, which is a continuation of application No. 08/627,677, filed on Apr. 2, 1996, now Pat. No. 5,735,960. This application Nov. 30, 1998, Appl. No. 201,029.
This patent is subject to a terminal disclaimer.
Int. Cl. C23C *16/00*
U.S. Cl. 427—248.1 **35 Claims**



1. A method of controlling the flow of gaseous reactants in a reaction chamber containing a wafer, comprising:

introducing the gaseous reactants into the chamber to an interior region adjacent to the wafer; and

removing the gaseous reactants from the interior region via a plurality of non-uniform flow paths to an exterior region within the chamber and adjacent to the interior region, the exterior region having a lower concentration of gaseous reactants than the interior region.

US 6,340,500 B1

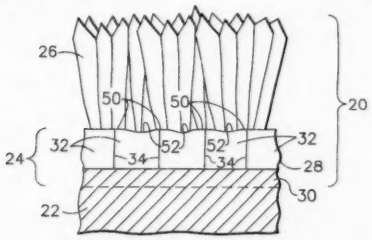
THERMAL BARRIER COATING SYSTEM WITH IMPROVED ALUMINIDE BOND COAT AND METHOD THEREFOR

Irene Theodor Spitsberg, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed May 11, 2000, Appl. No. 569,912

Int. Cl. C23C *16/00;* **B05D** *3/02;3/12*

U.S. Cl. 427—250 **21 Claims**



1. A method of improving the thermal fatigue life of a thermal barrier coating system that comprises a thermal barrier coating adhered to a diffusion aluminide bond coat on a surface of a component, the method comprising the steps of:

depositing the bond coat on the component so as to be characterized by substantially columnar grains that extend substantially through that portion of the bond coat overlying the surface of the component, the grains having grain boundaries exposed at the surface of the bond coat, the grain boundaries defining grain boundary ridges at the surface of the bond coat;

peening the surface of the bond coat at an intensity of at least 6A up to 12A and with a coverage of at least 100% to flatten at least some of the grain boundary ridges and thereby form flattened grain boundary surfaces; and then

depositing the thermal barrier coating on the surface of the bond coat.

US 6,340,501 B1

DEVICE AND METHOD FOR MANUFACTURING AN OPTICAL RECORDING MEDIUM

Toshifumi Kamiyama, Tsuyama; Toshiaki Kunieda, Minoo, and Sadayuki Okazaki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP98/02020, § 371 Date Apr. 5, 2000, § 102(e) Date Apr. 5, 2000, PCT Pub. No. WO98/50916, PCT Pub. Date Nov. 12, 1998

PCT Filed May 7, 1998, Appl. No. 423,249

Claims priority, application Japan, May 8, 1997, 09-117864; Oct. 2, 1997, 09-269563

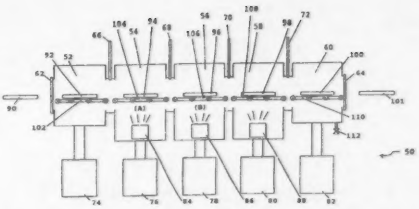
Int. Cl. C23C *14/12;14/24;14/34;14/56;16/54*

U.S. Cl. 427—255.6 **31 Claims**

1. A device for manufacturing an optical recording medium having a plurality of recording layers formed on a substrate, comprising:

a vacuum pre-treatment chamber;

a plurality of recording layer forming chambers each provided with at least one recording layer forming unit for forming a recording layer by vapor deposition of an organic pigment material onto a substrate, wherein said at least one recording layer forming unit includes an organic pigment material supplying mechanism and plural heaters, with said organic pigment material supplying mechanism for intermittently supplying the organic pigment material to said plural heaters so that the organic pigment material can be successively heated and finally evaporated by said plural heaters;



a reflective layer forming chamber provided with at least one reflective layer forming unit; and

a Vacuum post-treatment chamber.

US 6,340,502 B1

HYDROPHOBIC COATING FOR GLAZING SHEET

Marie-Jose Azzopardi, Vincennes; Laurent Delattre, Paris, and Nathalie Codazzi, Eaubonne, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

PCT No. PCT/FR98/02123, § 371 Date Sep. 8, 1999, § 102(e) Date Sep. 8, 1999, PCT Pub. No. WO99/18168, PCT Pub. Date Apr. 15, 1999

PCT Filed Oct. 6, 1998, Appl. No. 319,238

Claims priority, application France, Oct. 6, 1997, 97 12410

Int. Cl. C09K *3/18;* **C03C** *17/30;* **C09D** *183/08*

U.S. Cl. 427—387 **24 Claims**

14. A process for forming a hydrophobic/oleophobic coating on a substrate, which comprises:

a) cleaning the substrate; and

b) applying a composition containing at least one alkoxysilane and at least one halosilane, each having a perfluorinated group at at least one end of the molecule.

US 6,340,503 B1

METHOD OF COATING A GAME BALL WITH A SOLVENT-BASED POLYURETHANE CURED WITH CATALYST

Vincent Simonds, Brimfield; Richard K. Gendreau, Springfield, and Thomas J. Kennedy, III, Wilbraham, all of Mass., assignors to Spalding Sports Worldwide, Inc., Chicopee, Mass.

Filed Mar. 1, 1996, Appl. No. 609,546

Int. Cl. B05D *1/02;3/02;* **C08G** *18/18;18/24*

U.S. Cl. 427—393.5 **13 Claims**

1. A method for coating a golf ball, comprising:

providing an unfinished golf ball,

applying a fast-curing coating system to the surface of the unfinished golf ball in an average initial wet thickness of no more than about 3.5 mils to form a coating thereon, the coating system being sprayed in doses of 90–200 mg, and comprising a first part containing (A) a polyol which is a condensation product of (1) an organic acid which includes at least one member selected from the group consisting of adipic acid, phthalic acid and isophthalic acid, (2) an anhydride, and (3) a glycol which includes at least one member selected from the group consisting of ethylene glycol and trimethylol propane, and (B) a catalyst, and a second part containing (C) a polyisocyanate which is present in a quantity appropriate to provide a ratio of N═C═O:—OH in the range of 0.9:1 to 1.8:1 and (D) up to 65 wt % of a solvent based upon weight of the coating system, the quantity of catalyst in the first part being sufficient to provide for an increase in viscosity of at

least 100% within 30 minutes after mixing if the mixture is maintained at 25° C., 1 atm and 60% relative humidity, and

curing the coating at an elevated temperature until the coating is substantially dry, the elevated temperature curing process taking no more than about 1.5 hours.

US 6,340,504 B1

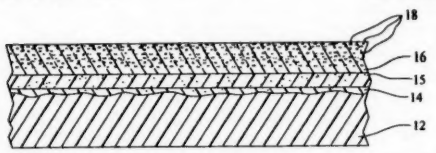
PROCESS FOR MAKING A RADIATION-CURED COATED ARTICLE

Paul Neumann, Louisville, Ky., and Donald P. Hart, Jr., Pittsburgh, Pa., assignors to Universal Woods Incorporated, Louisville, Ky.

Provisional application No. 60/101,807, filed on Sep. 25, 1998. This application Jul. 12, 1999, Appl. No. 352,014.

Int. Cl. C08F *2/46*

U.S. Cl. 427—493 **21 Claims**



1. A process for making a cured sublimatable coated article comprising:

coating a substrate with a radiation curable top coat, said substrate being a plastic or a high pressure laminate;

subjecting said top coat to a curing step including curing with an electron beam, ultraviolet radiation, or a combination thereof; and,

transferring a sublimatable ink to said top coat, said sublimatable ink penetrating into said top coat.

US 6,340,505 B1

PROCESS FOR PRODUCING A MAGNETIC RECORDING MEDIUM

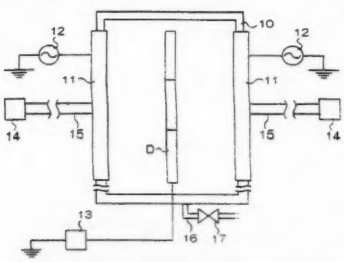
Mikio Suzuki; Noriyuki Miyamoto; Emi Shimaoka, and Kimie Takagi, all of Chiba, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Provisional application No. 60/137,496, filed on Jun. 4, 1999. This application Dec. 22, 1999, Appl. No. 469,278.

Claims priority, application Japan, Dec. 22, 1998, 10-365709

Int. Cl. H05H *1/02*

U.S. Cl. 427—570 **10 Claims**



1. A process for producing a magnetic recording medium comprising forming a hydrogenated carbon protective film on a disk through a plasma CVD method using a reaction gas containing a hydrocarbon serving as a raw material,

wherein during the forming of the carbon protective film, the process includes supplying a high-frequency power of 50 to 2000 W to electrodes and

applying a pulse direct-current bias to the disk with the pulse direct-current bias having a mean voltage of −700 to −150 V and a positive voltage peak value of 10 to 100 V,

wherein the disk comprises a non-magnetic substrate on which a non-magnetic undercoat film and a magnetic film are formed,

wherein the formed protective film has a density of 2.2 g/cm^3 or more.

US 6,340,506 B1

PHOTOCROSSLINKABLE POLYIMIDES

Richard Buchecker, Zurich, Switzerland; Guy Marck, Schlierbach, and Olivier Muller, Lautenbach, both of France, assignors to Rolic Ag, Zug, Switzerland

Continuation of application No. PCT/IB98/01425, filed on Sep. 15, 1998. This application Mar. 23, 2000, Appl. No. 534,136.

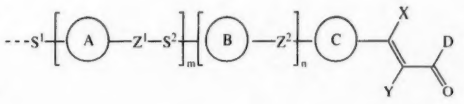
Claims priority, application Switzerland, Sep. 25, 1997, 2257/97

Int. Cl. C09K *19/00;19/38;* **C08F** *2/46;* **C08J** *3/28*

U.S. Cl. 428—1.26 **20 Claims**

1. A polyimide side-chain polymer, polyamide acid side-chain polymer, or polyamide acid ester side-chain polymer, which comprises as a side chain a photocrosslinkable group of the general formula I:

I



wherein the broken line indicates the point of linkage to the polymer main chain and wherein

A, B each independently of the other represents unsubstituted or optionally fluoro-,chloro-, cyano-, alkyl-, alkoxy-, fluoroalkyl- or fluoroalkoxy-substituted phenylene, pyridine-2,5-diyl, pyrimidine-2,5-diyl, cyclohexane-1,4-diyl, piperidine-1,4-diyl, or piperazine-1,4-diyl;

C represents unsubstituted or optionally fluoro-, chloro-, cyano-, alkyl, alkoxy-, fluoroalkyl- or fluoroalkoxy-substituted phenylene, or pyrimidine-2,5-diyl, pyridine-2,5-diyl, 2,5-thiophenylene, 2,5-furanylene, 1,4- or 2,6-naphthylene;

D represents —OR^1, —NR^{1}R^4, or an oxygen atom linked to ring C in the ortho-position to form a coumarin unit, wherein R^1 is an optionally fluoro- or chloro-substituted straight-chain or branched alkyl group having from 1 to 20 carbon atoms or an optionally fluoro-, chloro-, alkyl- or alkoxy-substituted cycloalkyl radical having from 3 to 8 ring atoms, and R^4 is hydrogen or, independently, a further R^1 group;

S^1 represents a spacer unit which is a straight-chain or branched alkylene grouping represented by —(CH$_2$)$_r$—, optionally mono- or poly-substituted by fluorine, chlorine or cyano, or a chain of the formula L^1—(CH$_2$)$_r$—L^2— or L^1—(CH$_2$)$_r$—L^2—(CH$_2$)$_s$—L^3—, wherein L^1, L^2 and L^3 each independently of the others represents a single bond or the linking functional group —O—, —CO—O—, —O—CO—, —NR^2—, —NR^2—CO—, —CO—NR^2—, —NR^2—CO—O—, —O—CO—NR^2—, —NR^2—CO—NR^2—, —CH═CH—, —C≡C—, or —O—CO—O—, wherein R^2 represents hydrogen or lower alkyl and r and s are each an integer from 1 to 20, with the proviso that r+s≦24;

S^2 represents a single covalent bond or a spacer unit;

X, Y each independently of the other represents hydrogen, fluorine, chlorine, cyano, or optionally fluoro-substituted alkyl having from 1 to 12 carbon atoms in which one CH$_2$ group or two or more non-adjacent CH$_2$ groups are optionally replaced by one or more of —O—, —CO—O—, —O—CO— and —CH═CH—;

Z^1, Z^2 each independently of the other represents a single covalent bond, —(CH$_2$)$_t$—, —O—, —CO—, —CO—O—, —O—CO—, —NR^3—, —CO—NR^3—, —R^{3}N—CO—, —(CH$_2$)$_u$—O—, —O—(CH$_2$)$_u$—, —(CH$_2$)$_u$—NR^3— or

—NR^3—$(CH_2)_u$—; R_3 representing hydrogen or lower alkyl, and t representing an integer from 1 to 4 and u representing an integer from 1 to 3;

m represents 0 or 1; and

n represents 0 or 1.

US 6,340,507 B2

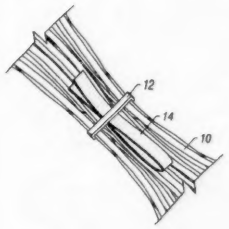
SELF-SECURING POMPON

Sylvia Gomez Holguin, 1600 Gladys Dr., Las Cruces, N. Mex. 88001

Provisional application No. 60/068,614, filed on Dec. 22, 1997. This application Dec. 22, 1998, Appl. No. 221,200.

Int. Cl. D04D *7/06*

U.S. Cl. 428—4 **4 Claims**



1. A pompon comprising a plurality of strands of material secured at a common point and an elastic loop of material attached at said common point, wherein said elastic loop of material is compressed against a finger of a user when said pompon is attached to a back of a hand of the user.

US 6,340,508 B1

FIRE-RESISTANT GLAZING ASSEMBLY

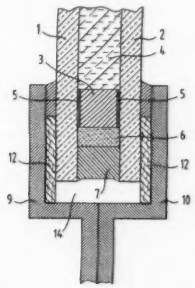
Simon Frommelt, Haan; Udo Gelderie, Stolberg, and Guido Plum, Aldenhoven, all of Germany, assignors to Vetrotech Saint-Gobain (International) AG, Switzerland

Filed Jun. 22, 1999, Appl. No. 337,551

Claims priority, application Germany, Jun. 23, 1998, 198 27 867

Int. Cl. E06B *3/24;* **B27N** *9/00;* **E04C** *2/54*

U.S. Cl. 428—34 **15 Claims**



1. Fire-resistant glazing assembly comprising at least two glass sheets having peripheral edges and spaced from each other to define an intermediate space, said sheets being connected together by a spacer along a peripheral region adjacent said peripheral edge and a water-containing interlayer filling said intermediate space between the glass sheets, the spacer being adhesively bonded to the two glass sheets and a peripheral seal is disposed between the spacer and said peripheral edge, wherein the spacer is made of silicone rubber.

US 6,340,509 B1

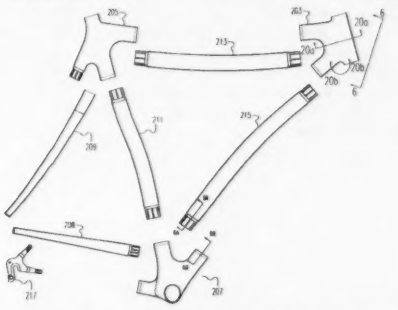
COMPOSITE BICYCLE FRAME AND METHOD OF CONSTRUCTION THEREOF

Ronald H. Nelson, Salt Lake County; Dimitrije Milovich, Salt Lake City; Paul Nordstrom Clark, Sandy, and Gregory Joseph Loughry, Salt Lake City, all of Utah, assignors to Radius Engineering, Inc., Salt Lake City, Utah

Continuation-in-part of application No. 08/839,110, filed on Apr. 23, 1997, now Pat. No. 5,985,197. This application May 29, 1997, Appl. No. 865,493.

Int. Cl. B29D *9/00;23/00;* **B32B** *31/00*

U.S. Cl. 428—34.7 **5 Claims**



1. A composite bicycle frame comprising at least one complex three-dimensional molded hollow composite bicycle lug with an interior essentially free of non-structural elements, the lug having walls of multiple interleaved plies of reinforcing fiber placed to obtain an interleave ratio greater than about 30 throughout the wall, the part having an internal shape that requires that an internal mandrel conforming to the general internal shape of the lug be a disintegratable mandrel to allow removal of the mandrel.

US 6,340,510 B2

THERMALLY PROTECTIVE SLEEVING

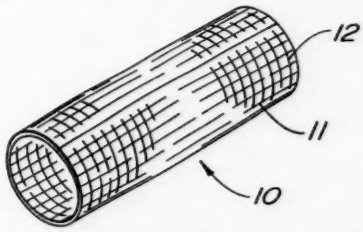
Joseph P. Hess, West Chester; Janice R. Maiden, Oreland, and Joan Bitwinski, Philadelphia, all of Pa., assignors to Federal-Mogul Systems Protection Group, Exton, Pa.

Continuation of application No. 08/607,805, filed on Feb. 27, 1996, now Pat. No. 6,045,884. This application May 11, 1999, Appl. No. 309,431.

This patent is subject to a terminal disclaimer.

Int. Cl. F16L *11/02*

U.S. Cl. 428—36.1 **9 Claims**



1. A wrap-around woven fabric sleeve for the protection of elongated substrates, said sleeve comprising warp and fill yarns, the fill yarns being resiliently settable yarns, and the warp yarns being multifilament yarns;

said sleeve having side edges disposed in adjacent relationship;

said fill yarns comprising a hybrid yarn, said hybrid yarn comprising a thermally insulating component and a resiliently settable component consisting essentially of a resiliently settable polymeric material or wire or mixtures thereof; and

said resiliently settable component being resiliently set to yieldably maintain the sleeve side edges in adjacent relationship.

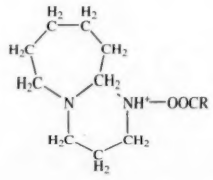
US 6,340,511 B1
FUEL HOSE

Shinobu Kanbe; Masashi Kondo, both of Komaki, and Motohide Nishimura, Kasugai, all of Japan, assignors to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Oct. 27, 1999, Appl. No. 428,060
Int. Cl. B29D *23/24;* **B32B** *1/08;* **F16L** *11/06*
U.S. Cl. 428—36.91 **20 Claims**

1. A fuel hose having improved interlayer peel strengths and improved ozone resistance as measured in an ozone test using 40° C., 50 pphr ozone and 20% elongation comprising an inner layer formed of a fluororubber and an outer layer formed of a blend of an acrylonitrile-butadiene rubber and polyvinyl chloride and adhered to said inner layer by vulcanization, wherein said polyvinyl chloride in said blend has an average polymerization degree of from 700 to 1,750 and is contained in an amount of from 15 to 45 parts by weight per 100 parts by weight of said blend; a carboxylic acid 1,8-diazabicyclo-(5,4,0)-undecene-7 salt (DBU salt) represented by formula (1)

(1)

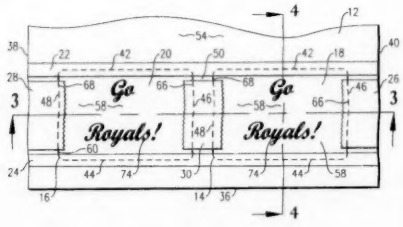


where R denotes a saturated or unsaturated hydrocarbon radical having a chain structure and/or a cyclic structure, or a derivative thereof, and the structure optionally contains atoms other than carbon atoms and hydrogen atoms, is incorporated in said blend; and a polyol-crosslinking-agent-containing vulcanizing agent is incorporated in said fluororubber.

US 6,340,512 B1
INTEGRATED CARD FORM WITH INTERMITTENT SECUREMENT

Merl Mercer; Kevin L. Marquardt, and Jesse D. Crum, all of Fort Scott, Kans., assignors to Ward/Kraft, Inc., Fort Scott, Kans.

Filed Jul. 21, 2000, Appl. No. 620,828
Int. Cl. B32B *7/06*
U.S. Cl. 428—42.2 **16 Claims**



1. A business form comprising:

at least one card having a front side, a back side, and a perimeter having a top border, a bottom border, and first and second side borders;

a ply having a top surface, a bottom surface, and a surrounding margin, said ply including at least one opening interiorly spaced from said surrounding margin complementally configured for receipt of said card within said opening in substantially coplanar relationship to said ply;

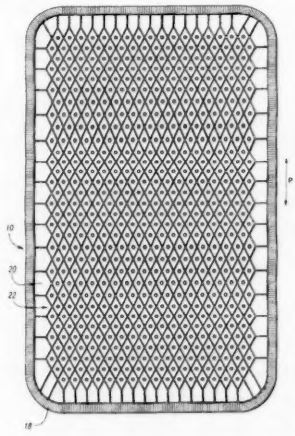
first and second elongated tape strips adhesively connected to the back side and the bottom surface in spaced relationship and respectively overlying said top border and said bottom border; and

first and second discrete tape patches positioned intermediate said first and second tape strips in spaced relationship from one another and adhesively connected to the back side and the bottom surface, said first and second tape patches respectively overlying said first and second side borders of said card.

US 6,340,513 B1
THROW-IN MAT FOR A VEHICLE FLOOR

Steven P. Hammond, Shippensburg, and Randy L. Boyd, Newburg, both of Pa., assignors to Lear Corporation, Southfield, Mich.

Filed Nov. 22, 1999, Appl. No. 444,164
Int. Cl. B32B *3/02;* **D05C** *5/00*
U.S. Cl. 428—95 **22 Claims**



1. A throw-in mat for a vehicle floor comprising:

a primary backing layer having first and second sides;

a carpet pile secured to the first side of the primary backing layer;

a thermoplastic back secured to the second side of the primary backing layer, said thermoplastic back having a base thickness and a contiguous diamond-shaped pattern of grooves formed therein such that the thermoplastic back has a residual thickness at each said groove which is less than approximately 50% of said base thickness, thereby preventing curling and bowing problems at extreme temperatures.

US 6,340,514 B1
CUSHIONED RUBBER FLOOR MAT ARTICLE COMPRISING AT LEAST ONE INTEGRATED RUBBER PROTRUSION AND AT LEAST TWO LAYERS OF RUBBER

Robert C. Kerr, and William O. Burke, III, both of LaGrange, Ga., assignors to Milliken & Company, Spartanburg, S.C.

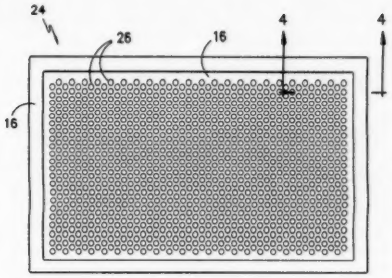
Filed Aug. 13, 1999, Appl. No. 374,707
Int. Cl. A47G *9/06;* **B32B** *3/00;* **B29C** *67/00*
U.S. Cl. 428—159 **14 Claims**

1. A cushioned rubber floor mat capable of withstanding rigorous industrial machine washing procedures comprising

a rubber mat structure comprising

at least a first layer comprised of foam rubber; and

at least a second layer comprised of solid rubber having a thickness of between about 2 to about 50 mils, wherein said



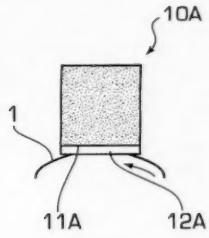
rubber is selected from NBR, SBR, carboxylated NBR, carboxylated SBR, chlorinated rubber, silicon-containing rubber, EPDM, and any mixtures thereof;

wherein at least one protrusion integrated within said rubber mat structure is present having a core portion and an outside surface portion, wherein the core portion of said at least one protrusion is comprised of said first layer of foam rubber, wherein the outside surface portion of said at least one protrusion is comprised of said second layer of solid rubber.

US 6,340,515 B1
CONDUCTIVE MEMBER

Gouki Sasagawa, Kanagawa; Tetsuya Nakamura, and Masato Ogasawara, both of Tokyo, all of Japan, assignors to Hokushin Corporation, Kanagawa; Toshiba Tec Kabushiki Kaisha, Tokyo, and Kabushiki Kaisha Toshiba, Kanagawa, all of Japan

Filed Sep. 1, 1999, Appl. No. 388,368
Int. Cl. B32B *23/02*
U.S. Cl. 428—192 **11 Claims**



2. A conductive member which is used in contact with a subject member, said conductive member having a single-body structure and formed of a polymeric base material that contains a conducting filler, wherein the true density of particles of the conducting filler or the specific gravity of particles including the conducting filler is greater than the specific gravity of the polymeric base material.

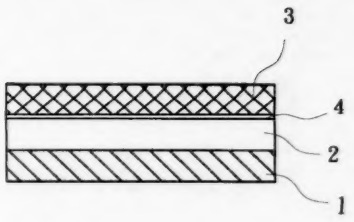
US 6,340,516 B1
INK JET RECORDING MATERIALS

Shu-Chu Shih, Hsinchu; Charng-Shing Lu, Tainan Hsien, and Jing-Pin Pan, Hsinchu Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 30, 1999, Appl. No. 240,797
Int. Cl. B41M *5/00;* **B05D** *5/04*
U.S. Cl. 428—195 **13 Claims**

1. An ink jet recording material formed by a process which comprises the following steps:

coating a base material with a first ink-receptive layer comprising a high valence metallic halide which is capable of reacting with an alginate; and



coating the surface of said first ink-receptive layer with a second ink-receptive layer comprising an alginate so as to generate a gel layer at the interface between said first ink-receptive layer and said second ink-receptive layer;

wherein said first ink-receptive layer comprises:

(a) polyvinylpyrrolidone of 0.5 to 5 percent by weight, said polyvinylpyrrolidone having a molecular weight of about $8*10^3$ to $2.9*10^6$;

(b) polyvinyl alcohol of 1 to 15 percent by weight, said polyvinylpyrrolidone having a molecular weight of about $1*10^4$ to $1*10^5$; and

(c) hydroxyethyl cellulose of 1 to 10 percent by weight.

US 6,340,517 B1
SECURITY LOTTERY TICKET STOCK

Charles W. Propst, Jr., Gettysburg, Pa., assignor to SKC Acquisition Corporation, Gettysburg, Pa.

PCT No. PCT/US98/13697, § 371 Date Feb. 29, 2000, § 102(e) Date Feb. 29, 2000, PCT Pub. No. WO99/01294, PCT Pub. Date Jan. 14, 1999
Provisional application No. 60/051,565, filed on Jul. 2, 1997. This PCT application Jul. 1, 1998, Appl. No. 446,977.
Int. Cl. B32B *3/00;* **B42D** *3/00*
U.S. Cl. 428—195 **22 Claims**

1. A security stock material comprising a natural brown kraft linerboard, said linerboard comprising one ply of natural brown kraft having on one side thereof at least one ply of bleached white kraft, and on the other side thereof, a black coating or black ink applied to the natural brown kraft ply and a top coating of opaque white ink or white coating.

US 6,340,518 B1
FLEXIBLE METAL-CLAD LAMINATES AND PREPARATION OF THE SAME

Mikio Kitahara; Minehiro Mori; Naoshi Mineta, and Takashi Kayama, all of Kanagawa, Japan, assignors to Mitsui Chemicals, Inc., Japan

Filed Mar. 16, 1999, Appl. No. 268,684
Int. Cl. B32B *7/02;15/08*
U.S. Cl. 428—215 **30 Claims**

1. A metal foil laminate wherein a polyimide layer (A) comprises a polyimide laminate having a three-layer structure in which thermoplastic polyimide layers are formed on both the surfaces of a polyimide film; metal foil layers are heated and pressed against both the sides of the polyimide laminate; and the thickness of the thermoplastic polyimide layer is 100% or more and less than 300% of an average roughness at 10 points on the surface of the metal foil which contacts the thermoplastic polyimide layer, wherein said average roughness of said metal foil is 0.47 to 1.85 μm.

US 6,340,519 B1

CHIPPING-RESISTANT PAINT

Koji Tanaka; Kenichi Kitano, and Toshiaki Masuda, all of Osaka, Japan, assignors to Matsumoto Yushi Seiyaku Co., Ltd., Yao, Japan

PCT No. PCT/JP97/02083, § 371 Date Dec. 12, 1998, § 102(e) Date Dec. 12, 1998, PCT Pub. No. WO97/48772, PCT Pub. Date Dec. 24, 1997

PCT Filed Jun. 17, 1997, Appl. No. 202,640

Claims priority, application Japan, Jun. 19, 1996, 8-157998

Int. Cl. B32B *5/16;7/02;3/26;* **B05D** *3/02;* **C08J** *9/32*

U.S. Cl. 428—327 **9 Claims**

1. A water-based chipping-resistant paint comprising, 30 to 65 weight percent of solid matter and 0.1 to 10 weight percent of low-temperature volatility solvent being dispersed in water, wherein the solid matter consists of 15 to 75 weight percent of film-formable resin, 0.2 to 25 weight percent of thermoexpandable microspheres which expand from about 20 to about 150 times their original volume, and 20 to 80 weight percent of chipping-resistant material.

US 6,340,520 B1

GIANT MAGNETORESISTIVE MATERIAL FILM, METHOD OF PRODUCING THE SAME MAGNETIC HEAD USING THE SAME

Fumihito Koike, and Naoya Hasegawa, both of Niigata-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

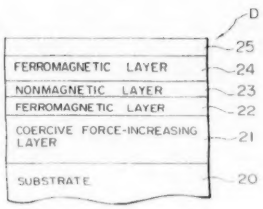
Division of application No. 08/626,103, filed on Apr. 3, 1996, now Pat. No. 5,742,458. This application Apr. 2, 1998, Appl. No. 54,424.

Claims priority, application Japan, Apr. 3, 1995, 7-078022

This patent is subject to a terminal disclaimer.

Int. Cl. G11B *5/66*

U.S. Cl. 428—332 **29 Claims**



1. A magnetoresistive material film comprising:

a coercive force increasing layer;

a first ferromagnetic layer formed on the coercive force increasing layer;

a nonmagnetic layer formed on the first ferromagnetic layer; and

a second ferromagnetic layer formed on the nonmagnetic layer;

wherein magnetization of the first ferromagnetic layer is pinned by the coercive force increasing layer which is provided adjacent to the first ferromagnetic layer so as to increase the coercive force of the first ferromagnetic layer,

wherein the second ferromagnetic layer has free magnetization such that a change in a magnetoresistance of the second ferromagnetic layer is produced at a low magnetic field,

wherein the coercive force increasing layer comprises α-Fe_2O_3, the coercive force in an applied magnetic field direction is substantially symmetrical with respect to an origin of an M-H curve, and

wherein the first ferromagnetic layer comprises Co, and the second ferromagnetic layer comprises a two-layer structure comprising a Co layer disposed between the nonmagnetic layer and a NiFe alloy layer.

US 6,340,521 B1

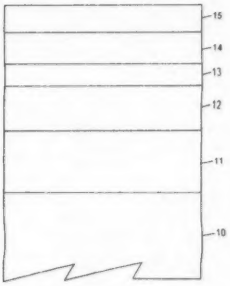
MAGNETIC RECORDING MEDIUM WITH PROTECTIVE BARRIER LAYER

Phuong Nguyen, Milpitas; Thanh Ha, San Jose, and Elsie Yang Chuang, Cupertino, all of Calif., assignors to Seagate Technology LLC, Scotts Valley, Calif.

Provisional application No. 60/107,869, filed on Nov. 9, 1998. This application Nov. 9, 1999, Appl. No. 436,495.

Int. Cl. G11B *5/72*

U.S. Cl. 428—336 **6 Claims**



1. A magnetic recording medium comprising:

a magnetic layer;

a barrier layer, having a thickness of about 5 Å to about 15 Å and comprising chromium or a chromium alloy, on a magnetic layer; and

a protective overcoat containing carbon and nitrogen, on the barrier layer, wherein the protective overcoat contains about 0.5 to about 5atomic % nitrogen.

US 6,340,522 B1

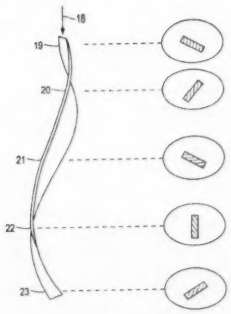
THREE-DIMENSIONAL TWISTED FIBERS AND PROCESSES FOR MAKING SAME

Sean Burke, Leitches Creek, Canada; Michael B. Macklin, Westford; Klaus-Alexander Rieder, Salem, both of Mass., and Jean-François Trottier, Bedford, Canada, assignors to WR Grace & Co.-Conn., New York, N.Y., and Atlantic Fiber Technologies Limited, Nova Scotia, Canada

Filed Jul. 13, 2000, Appl. No. 615,595

Int. Cl. D01F *6/00*

U.S. Cl. 428—359 **18 Claims**



1. Fibers for reinforcing concrete, comprising: a plurality of fibers having an average length of 5–100 mm, an average width of 0.25–8.0 mm, an average thickness of 0.005–3.0 mm, and first and second opposed ends defining an intermediate portion therebetween having a three-dimensional twist, the three-dimensional twist substantially following a curve described by an equation

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} a \cdot \cos(\omega_1 \cdot \tau) \\ b \cdot \sin(\omega_2 \cdot \tau) \\ v \cdot \tau \end{pmatrix}$$

wherein a, b, ω_1, ω_2, v and τ are real numbers, and wherein a and b are bounded by 0.25 mm≦a, b≦25 mm.

US 6,340,523 B1

PROCESS FOR PRODUCING HIGH STRENGTH, HIGH SHRINKAGE NYLON 66 FILAMENT YARN

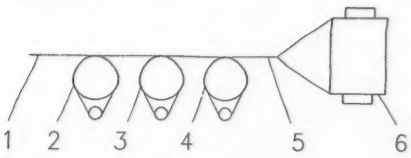
Klaus Fischer, Rosenberghalde 2, CH-6004 Luzern; Hans Linz, Guetrutiweg 2, CH-6010 Kriens, and Luzius Berger, Rosenstrasse 19, CH-6010 Kriens, all of Switzerland

Filed Oct. 27, 1999, Appl. No. 427,605

Claims priority, application Switzerland, Aug. 24, 1995, 2415/95

Int. Cl. D01F *6/60*

U.S. Cl. 428—364 **1 Claim**



1. A nylon 66 filament yarn for industrial fabrics, characterized in that the nylon 66 filament yarn has a tenacity of at least 60 cN/tex, an elongation of 10 to 25% and a hot air shrinkage of 7–11% (160° C.) and has been wound in an amount of at least 6 kg onto a package centre (cheese).

US 6,340,524 B1

PROCESS FOR MAKING LOAD LIMITING YARN

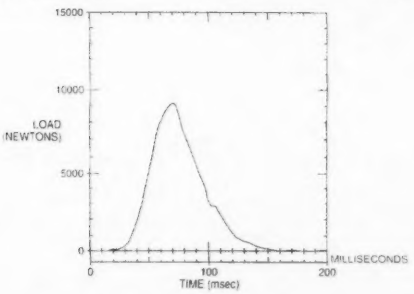
Weiming Tang, New York, N.Y.; Frank Mares, Whippany, and Robert Clark Morgan, Summit, both of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of application No. 09/352,110, filed on Jul. 14, 1999, which is a continuation of application No. 09/083,493, filed on May 22, 1998, now Pat. No. 6,228,488. This application May 1, 2001, Appl. No. 714,640.

This patent is subject to a terminal disclaimer.

Int. Cl. D01F *6/00;6/92*

U.S. Cl. 428—364 **8 Claims**



1. Cordage made of copolymer comprising:

(a) a first block of polyester wherein said first block is made from an aromatic polyester having: (I) an intrinsic viscosity which is measured in a 60/40 by weight mixture of phenol and tetrachloroethane and is at least about 0.8 deciliter/gram and (ii) a Newtonian melt viscosity which is measured by capillary rheometer and is at least about 7,000 poise at 280° C.; and

(b) a second block of polyester wherein said second block is made from lactone monomer and said copolymer has a melting point of at least about 230° C.

US 6,340,525 B1

NON-CRIMPING POLYESTER MONOFILAMENT AND PROCESS FOR PRODUCING SAME

Tetsuya Akamatsu, Ibaraki, and Chiaki Tashiro, Matsuyama, both of Japan, assignors to Teijin Limited, Osaka, Japan

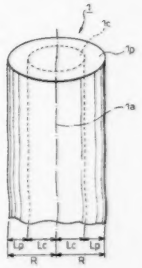
PCT No. PCT/JP00/04157, § 371 Date Feb. 23, 2001, § 102(e) Date Feb. 23, 2001, PCT Pub. No. WO01/00911, PCT Pub. Date Jan. 4, 2001

PCT Filed Jun. 23, 2000, Appl. No. 763,471

Claims priority, application Japan, Jun. 24, 1999, 11-178111

Int. Cl. D01F *6/00;* **D01P** *6/62*

U.S. Cl. 428—364 **28 Claims**



1. A non-crimping polyester monofilament formed from a polyester resin,

wherein the polyester resin has an intrinsic viscosity which varies in such manner that the farther the location of a part of the monofilament from the longitudinal axis of the monofilament in the direction at right angles to the longitudinal axis, the lower the intrinsic viscosity of a portion of the polyester resin located in the part of the monofilament, and a portion of the polyester resin located in a peripheral part (p) of the monofilament has an average intrinsic viscosity [η]f–p of 0.6 to 1.1, determined in orthochlorophenol at a temperature of 35° C., the peripheral part (p) concentrically surrounding a center part (c) of the monofilament extending along the longitudinal axis of the monofilament.

US 6,340,526 B1

WATERLESS PLANOGRAPHIC PRINTING PLATE PRECURSOR AND PRODUCTION METHOD THEREOF

Toshifumi Inno, and Tsumoru Hirano, both of Shizuoka-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Feb. 8, 2000, Appl. No. 499,646

Claims priority, application Japan, Feb. 18, 1999, 11-039332

Int. Cl. B32B *25/20*

U.S. Cl. 428—391 **17 Claims**

1. A waterless planographic printing plate precursor, comprising in the following order:

a substrate on which are superposed a light-to-heat conversion layer containing a compound for converting laser to heat, together with a reaction product of a metallic chelate compound and/or a self-condensation product of a metallic chelate compound; and

a silicone rubber layer,

wherein upon laser exposure in image portions to be formed in the light-to-heat conversion layer by the laser exposure, said compound in the light-to-heat conversion layer converts laser

light to heat and causes removal of the light-to-heat conversion layer by a process selected from the group consisting of combustion, fusion, decomposition, vaporization and explosion in the image portions.

US 6,340,527 B1

ENCAPSULATION OF ACTIVE INGREDIENTS

Jeroen Johannes Gerardus Van Soest; Renée Josie Gide Van Schijndel, both of Wageningen, and Kornelis Fester Gotlieb, Assen, all of Netherlands, assignors to ATO B.V., Wageningen, Netherlands

PCT No. PCT/NL98/00377, § 371 Date Jan. 3, 2000, § 102(e) Date Jan. 3, 2000, PCT Pub. No. WO99/01214, PCT Pub. Date Jan. 14, 1999

PCT Filed Jul. 1, 1998, Appl. No. 462,176

Claims priority, application Netherlands, Jul. 1, 1997, 1006444

Int. Cl. B32B *15/02;* **C08L** *5/00*

U.S. Cl. 428—402.2 **15 Claims**

1. A process for preparing microparticles which contain an active ingredient in a starch shell, characterised by preparing a fine dispersion of the active ingredient and starch or a derivative thereof in water, comprising at least 25% of granular starch, taking up said distribution in a hydrophobic phase, particles of the distribution being formed in the hydrophobic phase, cross-linking the starch or derivative thereof and, if desired, removing the hydrophobic phase, the starch remaining granular throughout the process.

US 6,340,528 B1

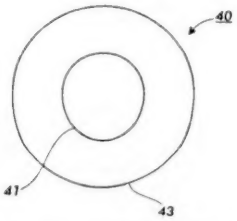
CROSSLINKABLE POLYMER COMPOSITIONS FOR DONOR ROLL COATINGS

Bing R. Hsieh, Webster, N.Y.; Yuan Yu, North Billerica, Mass.; Timothy J. Fuller, Pittsford, N.Y.; John F. Yanus, Webster, N.Y.; Damodar M. Pai, Fairport, N.Y.; Heiko Rommelmann, Webster, N.Y.; Allen J. Thompson, Sodus, N.Y.; Donald S. Stanton, Penfield, N.Y.; Michelle L. Schlafer, Fairport, N.Y.; Alan R. Kuntz; Ann M. Kazakos, both of Webster, N.Y.; William H. Wayman, and Steven C. Hart, both of Ontario, N.Y., assignors to Xerox Corporation, Stamford, Conn.

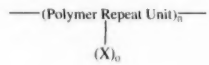
Filed Jan. 19, 2000, Appl. No. 487,288

Int. Cl. B23B *27/36*

U.S. Cl. 428—412 **10 Claims**

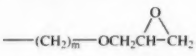


1. A donor member comprising a substrate and having thereover a crosslinked oxidized transport coating comprising a charge transport molecule, a crosslinked polymer formed from a crosslinkable polymer binder, and an oxidant, wherein the crosslinkable polymer binder is a polymer having a general structure



wherein the polymer repeating unit is a polyether, polycarbonate, polyethercarbonate, polyester, polyimide, polyimine, polyurethane, polysiloxane, polyethersulfone or polystyrene,

$(X)_o$ is a crosslinker selected from the group consisting of $(CH_2)_mCH{=}CH_2$, $(CH_2)_mOCH_2CH_2OCH{=}CH_2$, $(CH_2)_m$—OH(Na, K, Li), $-(CH_2)_m-NH_2$,



$-(CH_2)_mOCN$, $-CH_2OC(O)CH{=}CH_2$, $CH_2(CH_2)_mCH_2COCl$ and norborene, wherein m is an integer of from 1 to 12 and o ranges from 0.2 to 2.0, and

n is a positive integer sufficient to achieve a weight average molecular weight between about 5,000 and about 200,000,

and wherein both the charge transport molecule and the oxidant are dispersed in the crosslinkable polymer binder.

US 6,340,529 B1

GLAZING PANEL

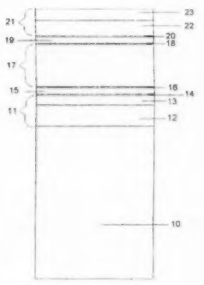
Junichi Ebisawa; Nobutaka Aomine; Satoshi Takeda; Kazuyoshi Noda, all of Kanagawa, Japan, and Daniel Decroupet, Jumet, Belgium, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Dec. 20, 1999, Appl. No. 466,785

Claims priority, application European Pat. Off., Dec. 18, 1998, 98204319

Int. Cl. B32B *17/06*

U.S. Cl. 428—432 **66 Claims**



1. A glazing panel, comprising in sequence at least:

a glass substrate,

a base antireflective layer comprising at least one layer comprising aluminum nitride,

an infra-red reflecting layer, and

a top antireflective layer,

wherein a heat treatment of said glazing panel causes an increase of the value of T_L of the glazing panel of at least 2.5%.

US 6,340,530 B1

MATTE COEXTRUDED NYLON FILM FOR BOOK COVERS

Simon J. Porter, Allentown, Pa.; Jeffrey D. Moulton, Morristown, and Lance R. Altizer, Spotswood, both of N.J., assignors to Honeywell International Inc., Morris Township, N.J.

Filed Apr. 28, 2000, Appl. No. 560,730

Int. Cl. B32B *27/00;27/34;* **B29C** *47/00;47/06;* **B42D** *3/00*

U.S. Cl. 428—474.4 **38 Claims**

1. A substantially transparent, coextruded film which comprises a first nylon layer attached adjacent to a second nylon layer, the first nylon layer comprising from about 20 weight percent to about 70 weight percent of a refractory filler based on the weight of the first nylon layer.

US 6,340,531 B1

INTERIOR TRIM FOR AUTOMOBILE

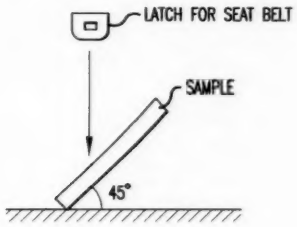
Akihiro Konda, Aichi-ken; Kazuo Ito, Toyoake; Kazunori Aotuka, Toyota; Yuichi Itoh, Ichihara; Akira Uchiyama, Ichihara, and Toru Takehara, Ichihara, all of Japan, assignors to Kojima Press Industry Co., Ltd., Aichi-ken, Japan

Continuation of application No. 08/504,549, filed on Jul. 20, 1995, now abandoned. This application Mar. 10, 1997, Appl. No. 812,916.

Claims priority, application Japan, Jul. 20, 1994, 6-167956

Int. Cl. B32B *27/32*

U.S. Cl. 428—516 9 Claims



1. An interior trim material for automotive use, obtained by successive injection molding, comprising:

(I) a surface layer formed of a composition comprising a mixture of:

(A) a partially crosslinked thermoplastic elastomer comprising (a) 10 to 30 parts by weight of a polypropylene resin and (b) 90 to 70 parts by weight of an α-olefin copolymer rubber per 100 parts by weight of the total of (a) and (b), and

(B) a polybutene-1 resin, said polybutene-1 resin being added after the formation of the partially crosslinked thermoplastic elastomer, wherein the proportion of (A) the thermoplastic elastomer and (B) the polybutene-1 resin are 95 to 65 parts by weight and 5 to 35 parts by weight, respectively, per 100 parts by weight of the total of (A) and (B), and

(II) a base layer formed of a polypropylene resin or a composition of a polypropylene resin and an inorganic filler.

US 6,340,532 B1

SHRINK FILMS

James Chin-Kuang Huang; Peter Andrew Sipos, both of Calgary; Lawrence Thomas Kale, Cochrane, all of Canada; Patrick R. Thomas, Vacavilla, Calif., and James Arthur Auger, Calgary, Canada, assignors to Nova Chemicals (International) S.A.

Filed Jan. 31, 2001, Appl. No. 773,644

Int. Cl. B32B *27/32*

U.S. Cl. 428—523 11 Claims

1. A monolayer shrink film having, in non-crosslinked form, 1) a dart impact strength as determined by ASTM D1709 of greater than 450 grams per mil; 2) a tear strength as determined by ASTM D1922 of greater than 25 grams per mil in the transverse direction; and 3) a shrink tension of greater than 400 pounds per square inch (psi) in the machine direction; wherein said shrink film is prepared from a pseudohomogeneous linear low density polyethylene having a COHO ratio of from 3.5/1 to 19/1.

US 6,340,533 B1

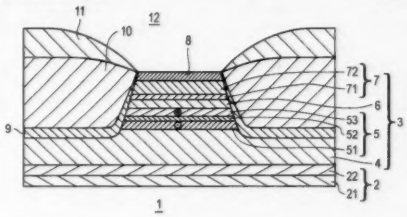
SPIN-VALVE MAGNETORESISTANCE SENSOR AND THIN FILM MAGNETIC HEAD

Masaki Ueno; Hideyasu Nagai, both of Osaka; Tatsuo Sawasaki, Amagasaki, and Fuminori Hikami, Osaka, all of Japan, assignors to Read-Rite Corporation, Fremont, Calif.

Filed Nov. 19, 1999, Appl. No. 443,953

Int. Cl. B32B *15/00;15/04;* G11B *5/127;5/39*

U.S. Cl. 428—611 3 Claims



1. A spin-valve magnetoresistance sensor, comprising:

a free magnetic layer;

a pinned magnetic layer including first and second ferromagnetic films formed in layers to enclose a nonmagnetic coupling film, the first ferromagnetic film antiferromagnetically coupled to the second ferromagnetic films;

a nonmagnetic layer enclosed between the pinned and free magnetic layers; and

an antiferromagnetic layer neighboring the pinned magnetic layer, the antiferromagnetic layer formed over a substrate, the first ferromagnetic film neighboring the antiferromagnetic layer and formed of a high resistivity material consisting essentially of CoFeB, CoMnB, CoFeC, amorphous CoZrTa, amorphous CoZrNb, and amorphous CoZrMo.

US 6,340,534 B1

WRAPPED SLIDE BEARING BUSHING

Wolfgang Bickle, Reilingen, and Werner Schubert, Wiesloch, both of Germany, assignors to KS Gleitlager GmbH, St. Leon-Rot, Germany

PCT No. PCT/EP98/03786, § 371 Date Nov. 10, 1999, § 102(e) Date Nov. 10, 1999, PCT Pub. No. WO99/01675, PCT Pub. Date Jan. 14, 1999

PCT Filed Jun. 20, 1998, Appl. No. 423,305

Claims priority, application Germany, Jul. 3, 1997, 197 28 497

Int. Cl. H05K *5/02*

U.S. Cl. 428—626 9 Claims

1. A wrapped slide bearing bushing for a sliding partner, the bushing comprising:

a metallic support layer;

a porous bearing layer sintered on said metallic support layer; and

a slide layer of a composite slide bearing material applied to said porous bearing layer, said composite slide bearing material which is at least 60% by volume of PTFE, 15 to 25% by volume of a metallic filler material and 1 to 3% by volume of carbon fibers, wherein:

said carbon fibers are essentially oriented in a given direction of said composite slide bearing material; and

the relative movement of the bushing and the sliding partner essentially extends transversely to said given direction.

US 6,340,535 B2

METHOD FOR THE HEAT TREATMENT OF A ZNSE CRYSTAL SUBSTRATE, HEAT TREATED SUBSTRATE AND LIGHT EMISSION DEVICE

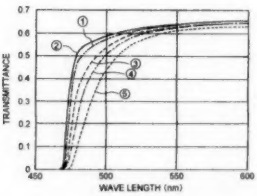
Yasuo Namikawa, Osaka, and Shinsuke Fujiwara, Itami, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 18, 2001, Appl. No. 859,580

Claims priority, application Japan, May 19, 2000, 12-147588

Int. Cl. B32B *15/04;* **H01L** *21/22*

U.S. Cl. 428—650 **9 Claims**



No.	TREATMENT	CARRIER CONCENTRATION
①	Se,Zn TWO STAGE TREATMENT	2.1×10^{17}
②		UNDOPE
③		5.1×10^{17}
④	Zn TREATMENT	8.5×10^{17}
⑤		9.1×10^{17}

1. A method for the heat treatment of a ZnSe crystal substrate by diffusing Al through the ZnSe crystal substrate, comprising previously forming an Al film on the substrate, first subjecting the substrate to a heat treatment in a Se atmosphere and then subjecting to a heat treatment in a Zn atmosphere.

2. The method for the heat treatment of a ZnSe crystal substrate as claimed in claim **1**, wherein the Al film has a film thickness in the range of 50 to 5000 Å.

6. A ZnSe crystal substrate treated by the heat treatment method as claimed in claim **1** or **2**.

US 6,340,536 B1

ZIRCONIUM AND NIOBIUM ALLOY COMPRISING ERBIUM, PREPARATION METHOD AND COMPONENT CONTAINING SAID ALLOY

Maxy Noe, Mirabeau; Pierre Beslu, Aix en Proveres; Jean-Christophe Brachet; Philippe Parmentier, both of Villebon-sur-Yvette, and Jacques Porta, Rians, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

PCT No. PCT/FR00/00267, § 371 Date Oct. 5, 2000, § 102(e) Date Oct. 5, 2000, PCT Pub. No. WO00/46414, PCT Pub. Date Aug. 10, 2000

PCT Filed Feb. 4, 2000, Appl. No. 646,874

Claims priority, application France, Feb. 5, 1999, 99/01370

Int. Cl. B32B *15/01;* **C22C** *16/00*

U.S. Cl. 428—660 **34 Claims**

15. A component comprising a zirconium alloy that includes by weight:

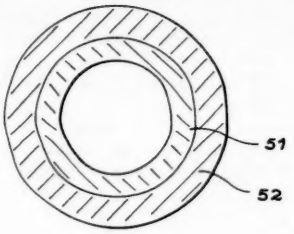
more than 0.6% of niobium;

from 0.1 to 3.0% of erbium;

from 0.05 to 0.5% of oxygen;

from 50 ppm to 0.6% of iron;

up to 3.5% of tin;



manufacturing impurities; and

the remainder zirconium.

US 6,340,537 B1

ORGANIC ELECTROLUMINESCENT DEVICE

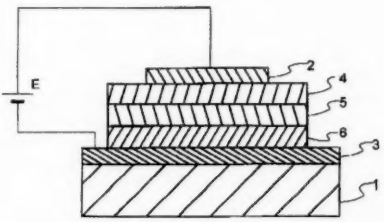
Michio Arai; Isamu Kobori, and Etsuo Mitsuhashi, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jan. 29, 1999, Appl. No. 239,963

Claims priority, application Japan, Jan. 27, 1999, 11-018775

Int. Cl. B62B *33/00;* **H05B** *33/04*

U.S. Cl. 428—690 **8 Claims**



1. An organic electroluminescent device comprising a hole injecting electrode, a negative electrode, and at least one organic layer between the electrodes; wherein

at least one of said at least one organic layer has a light emitting function;

a high resistivity inorganic hole injecting layer is provided between said hole injecting electrode and said organic layer, said high resistivity inorganic hole injecting layer having conductive paths for electron blockage and hole transportation; and

an inorganic insulative electron injecting and transporting layer is provided between said organic layer and said negative electrode,

said inorganic insulative electron injecting and transporting layer containing at least one oxide selected from strontium oxide, magnesium oxide, calcium oxide, lithium oxide, rubidium oxide, potassium oxide, sodium oxide and cesium oxide as its main component, wherein said high resistivity inorganic hole injecting layer has a resistivity of 1 to 1×10^{11} Ω·cm.

US 6,340,538 B1

MODULAR BATTERY TRAY ASSEMBLY

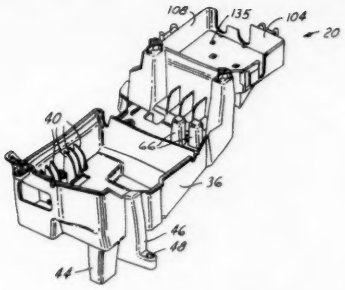
Gary Jack King, Fenton, Mich., assignor to Delphi Technologies, Inc., Troy, Mich.

Filed Feb. 23, 2000, Appl. No. 511,466

Int. Cl. H01M *2/10*

U.S. Cl. 429—96 **7 Claims**

1. A battery tray assembly comprising a bottom member and four side walls which are attached to the bottom member thereby



forming an enclosure; the enclosure adapted to removably receive a battery therein; one of the walls having integral battery holddown members to retain the battery in position when placed in the enclosure; spaced adjacent to one of the walls a slot for snugly retaining an electrical control module; a manually operable cover which securely fits over the enclosure and the module when it is placed in the slot, the cover when open facilitates inspection or removal of the battery from the enclosure; integral with the slot for the control module a second enclosure formed of a second bottom member and four sides, the second enclosure adapted to snugly retain a second module; and a second cover being manually removable which fits over the second enclosure.

US 6,340,539 B1

2,5-DIMERCAPTO-1,3,4-THIADIAZOLE DILITHIUM SALT AND ITS DIHYDRATE AND THEIR MANUFACTURE, AND A SECONDARY LITHIUM BATTERY AND POSITIVE ELECTRODE-ACTIVE MATERIAL COMPRISING THE SAME

Satoshi Yamaguchi; Satoshi Nakagawa; Sunao Mitsui, and Susumu Ohno, all of Takasago, Japan, assignors to Toyo Kasei Kogyo Company Limited, Osaka, Japan

Filed Jun. 21, 1999, Appl. No. 337,469

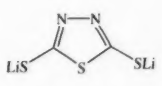
Claims priority, application Japan, Jun. 23, 1998, 10-193729; Jun. 23, 1998, 10-193730; Jun. 23, 1998, 10-193731

Int. Cl. H01M *4/60;* **C07D** *285/125;285/12*

U.S. Cl. 429—213 **22 Claims**

1. A method for manufacturing dilithium salt dihydrate of 2,5-dimercapto-1,3,4-thiadiazole represented by the formula (1), which method comprises adding 2,5-dimercapto-1,3,4-thiadiazole with a lithiation agent, adjusting a molar ratio of lithium in a lithiation agent to 1.8 to 3 relative to 2,5-dimercapto-1,3,4-thiadiazole in a solvent, and allowing the 2,5-dimercapto-1,3,4-thiadiazole to react with the lithiation agent at 0 to 120° C. to obtain the dilithium salt dihydrate of 2,5-dimercapto-1,3,4-thiadiazole represented by the formula (1).

(1)



US 6,340,540 B1

HOLOGRAM RECORDING SHEET HOLOGRAPHIC OPTICAL ELEMENT USING SAID SHEET AND ITS PRODUCTION PROCESS

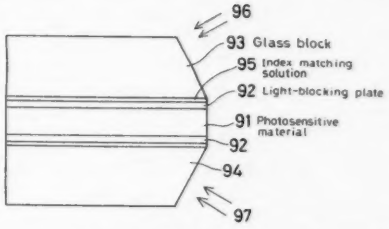
Kenji Ueda; Tsuyoshi Hotta; Yukio Taniguchi; Atsushi Sekiguchi, and Hideyuki Iriyama, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Division of application No. 08/897,088, filed on Jul. 18, 1997, now Pat. No. 6,127,066, which is a continuation of application No. 08/459,663, filed on Jun. 2, 1995, now abandoned, which is a division of application No. 08/128,143, filed on Sep. 29, 1993. This application Jun. 29, 2000, Appl. No. 606,311.

Claims priority, application Japan, Nov. 27, 1992, 4-318411; Nov. 27, 1992, 4-318412; Sep. 21, 1993, 5-234713

Int. Cl. G03H *1/04;1/30*

U.S. Cl. 430—1 **11 Claims**



1. A method for producing a holographic optical element, characterized by bringing light-blocking plates provided with windows in mosaic configuration into close contact with both sides of a photosensitive material, irradiating both sides of the photosensitive material with laser light through both the light-blocking plates to induce interference in the photosensitive material, and sequentially shifting the positions of the light-blocking plates and varying the angle of incidence and/or the wavelength of the laser light, thereby recording regions of interference fringes of volume phase hologram diffraction gratings with varying grating spacings that are independent in the thickness direction of the photosensitive material and distributed in the planar direction thereof, wherein said regions are differently spectrally sensitized.

US 6,340,541 B1

MASK FOR RECYCLING AND FABRICATION METHOD THEREOF

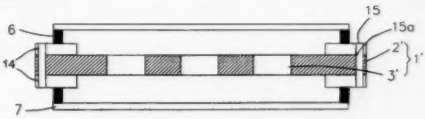
Seung Seok Yoo, Daeku, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Aug. 26, 1998, Appl. No. 140,459

Claims priority, application Rep. of Korea, Dec. 17, 1997, 97-070071

Int. Cl. G03F *9/00*

U.S. Cl. 430—5 **17 Claims**



1. A mask, comprising:

a thin film filtering light according to a predetermined-shaped pattern;

a pair of mask frames positioned at peripheral upper and lower surfaces of the thin film, each mask frame having an opening in a center part thereof;

at least one removable mask frame holder fixing the mask frames to the thin film; and

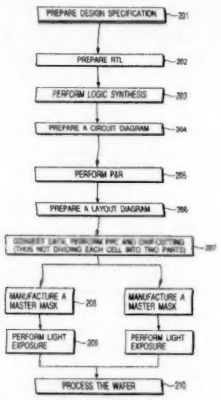
a pellicle positioned on at least one side of the thin film and attached to at least one of top and bottom surfaces of the mask frames.

US 6,340,542 B1

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE, METHOD OF MANUFACTURING A PHOTOMASK, AND A MASTER MASK

Soichi Inoue; Suigen Kyoh, both of Yokohama; Iwao Higashikawa, Tokyo, and Ichiro Mori, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 6, 1999, Appl. No. 455,320
Claims priority, application Japan, Dec. 8, 1998, 10-348623
***Int. Cl. G03F** 9/00; **G06F** 17/50*
U.S. Cl. 430—5 **15 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

using a master mask having function-block patterns obtained from information representing the circuit configuration of the semiconductor device to be manufactured, and, selecting from the master mask, at least one of the function-block patterns which corresponds to a prescribed position on a wafer to be exposed to light; and

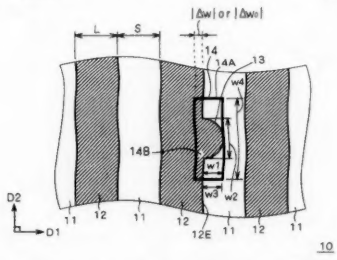
transferring the selected function-block patterns sequentially to the wafer, thereby forming a desired pattern thereon by photolithography means.

US 6,340,543 B1

PHOTOMASK, MANUFACTURING METHOD THEREOF, AND SEMICONDUCTOR DEVICE

Yoshikazu Nagamura, Tokyo; Kazuhito Suzuki, Hyogo; Kunihiro Hosono, and Nobuyuki Yoshioka, both of Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Ryoden Semiconductor System Engineering Corporation, Itami, both of Japan

Filed Apr. 25, 2000, Appl. No. 557,326
Claims priority, application Japan, Oct. 19, 1999, 11-296705
Int. Cl. G03F 9/00; **G21K** 5/10
U.S. Cl. 430—5 **16 Claims**



1. A method for manufacturing a photomask comprising a quartz glass and a pattern composed of a metal film formed on a surface of said quartz glass, the method comprising the steps of:

detecting whether said pattern has an opaque defect continuous with or proximate to said pattern and having a first width in a first direction and a second width in a second direction, said second direction being perpendicular to said first direction and corresponding to a direction in which an edge of said pattern is extended; and

when said opaque defect is detected in said step of detecting, removing said opaque defect by applying a given beam onto a beam irradiation region obtained by correcting in said first direction an irradiation region on said surface of said quartz glass which contains said opaque defect and has third and fourth widths respectively in said first and second directions on the basis of a quantity of bias offset of repairing,

wherein said quantity of bias offset of repairing is set in accordance with an output condition of said given beam, the dimension in said first direction of a region on said surface of said quartz glass where said opaque defect exists, and size of said opaque defect so that, when said pattern is transferred onto a semiconductor substrate to form a resist pattern by using said photomask obtained after said step of applying the given beam, the rate of dimensional variation of said resist pattern with respect to original dimension of said resist pattern to be obtained in the absence of said opaque defect falls within a given range, and

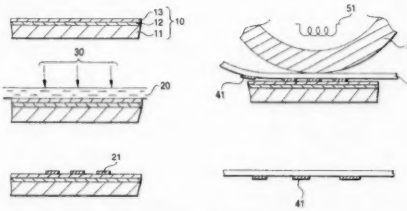
when said quantity of bias offset of repairing has a minus sign, said given beam is controlled so that said beam irradiation region is given as a region including said irradiation region and a pattern repaired region extending into said pattern in said first direction by the absolute value of said quantity of bias offset of repairing, from a boundary between said opaque defect and said pattern when said opaque defect is continuous with said pattern, and from a part facing to said opaque defect in said edge of said pattern when said opaque defect is proximate to said pattern.

US 6,340,544 B1

PROCESS FOR RECORDING IMAGE USING PHOTOELECTRODEPOSITION METHOD AND PROCESS FOR PRODUCING COLOR FILTER USING THE SAME

Eiichi Akutsu; Shigemi Ohtsu, and Lyong Sun Pu, all of Nakaimachi, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of application No. 08/929,673, filed on Sep. 15, 1997, now Pat. No. 6,066,420. This application May 25, 1999, Appl. No. 317,997.
Claims priority, application Japan, Sep. 19, 1996, 8-248228; Jun. 10, 1998, 10-162170
Int. Cl. G02B 5/20; **G03G** 5/024
U.S. Cl. 430—7 **18 Claims**



1. A process for recording an image comprising

the steps of; arranging a substrate comprising a support, a conductive film and a photosemiconductor thin film laminated in this order, in such a manner that at least said photosemiconductor thin film comes in contact with an electrodeposition solution; and

applying an electric current or a voltage to said conductive film, and simultaneously irradiating said substrate with light from the side of said photosemiconductor thin film through said electrodeposition solution, to generate a photoelectromotive

force on a light irradiated part of said photosemiconductor thin film, so as to form an electrodeposition film on said light irradiated part.

US 6,340,545 B1

PHOTOSENSITIVE RESIN COMPOSITION, METHOD OF FORMING PATTERNS, PHOTOSENSITIVE LIQUID FOR FORMING COLORED IMAGES, AND COLOR FILTER

Tatsuhiko Murai, and Tadahiro Furukawa, both of Bunkyo, Japan, assignors to Kyodo Printing Co., Ltd., Tokyo, Japan

Filed Mar. 7, 2000, Appl. No. 520,232

Claims priority, application Japan, Mar. 8, 1999, 11-060096; Jun. 11, 1999, 11-165486

Int. Cl. G02B 5/20; G02F 1/1335; G03F 7/039; 7/30

U.S. Cl. 430—7 10 Claims

1. A photosensitive resin composition comprising:

a resin being a polyimide resin precursor obtained by polymerization reaction of a diamine and an aromatic tetracarboxylic anhydride; and

an arene compound represented by the following formula (1):

$$[(Ar)(CpM)_2]^{2+}2X^- \quad (I)$$

where Ar denotes an aromatic π-arene capable of coordinating with at lest two metalcyclopentadienyl compounds; Cp denotes an anion of cyclopentadiene; M denotes a metal cation; and X denotes any one selected from the group consisting of SbF_6^-, BF_4^-, AsF_6^- and PF_6^-.

US 6,340,546 B1

POSITIVE PHOTOSENSITIVE RESIN COMPOSITION, METHOD OF FORMING RELIEF PATTERN, AND ELECTRONIC PART

Mamoru Sasaki, Hitachi, Japan, assignor to Hitachi Chemical Dupont Microsystems Ltd., Tokyo, Japan, and Hitachi Chemical Dupont Microsystems L.L.C., Wilmington, Del.

Filed Feb. 9, 2000, Appl. No. 500,631

Claims priority, application Japan, Feb. 9, 1999, 11-031936

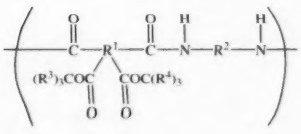
Int. Cl. G03F 7/023; 7/30

U.S. Cl. 430—18 14 Claims

1. A positive photosensitive resin composition comprising:

(A) a polyamidate having repetitive units of general formula (I) and being soluble in aqueous alkaline solution

(I)



wherein R^1 is a tetravalent organic group which has a condensed polycyclic structure consisting of 2 to 5 benzene rings or a polycyclic structure wherein two or three aromatic rings are linked to each other through one or two bonds selected from the group consisting of a single bond, an ether bond, an isopropylidene bond, a hexafluoroisopropylidene bond, a sulfone bond, a methylene bond and a carbonyl bond, R^2 is a divalent organic group having a phenolic hydroxyl group, three R^3 groups and three R^4 groups each independently are an alkyl group or a hydrogen atom, and at least two R^3 groups and at least two R^4 groups and at least two R^4 groups are alkyl groups, and

(B) a compound capable of generating an acid when exposed to light.

US 6,340,547 B1

METHOD OF FORMING CIRCUIT PATTERNS ON SEMICONDUCTOR WAFERS USING TWO OPTICAL STEPPERS HAVING NONALIGNED IMAGING SYSTEMS

Ming-Fa Chen; Chih-Chien Hung; Chia-Hsiang Chen, all of Hsin-Chu, and Fu-Tien Wong, Taow-Yuan, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin Chu, Taiwan

Filed Jan. 11, 2000, Appl. No. 481,032

Int. Cl. G03F 9/00

U.S. Cl. 430—22 7 Claims

1. A method of forming circuit patterns on a semiconductor wafer using first and second optical imaging steppers respectively having first and second differing optical alignment systems, comprising the steps of:

(a) imaging a first alignment mark on said wafer using said first stepper;

(b) determining the two dimensional optical coordinate differences between said first and second alignment systems;

(c) translating the optical coordinates of second alignment system based on the coordinate differences determined in step (b), whereby to correlate said second alignment system with said first alignment system; and

(d) imaging a second alignment mark on said wafer using said second alignment system and the optical coordinates translated in step (c), whereby said first and second alignment marks are aligned in a common optical alignment system.

US 6,340,548 B1

ORGANOPHOTORECEPTORS FOR ELECTROPHOTOGRAPHY FEATURING NOVEL CHARGE TRANSPORT COMPOUNDS

Nusrallah Jubran, Saint Paul; Zbigniew Tokarski, and Terrance P. Smith, both of Woodbury, all of Minn., assignors to Imation Corp., Oakdale, Minn.

Filed Mar. 16, 2000, Appl. No. 526,789

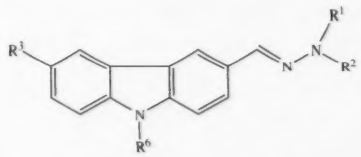
Int. Cl. G03G 5/047; 15/00; C07P 209/82

U.S. Cl. 430—58.45 13 Claims

1. An organic photoreceptor comprising:

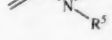
(a) a charge transport compound having the formula

(I)



where R^1 and R^2, independently, are hydrogen, an alkyl group, or an aryl group;

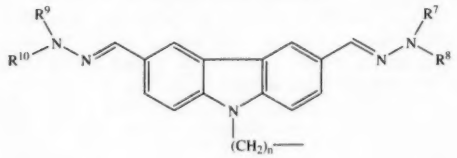
R^3 is hydrogen or a hydrazone group having the formula



R^4 and R^5, independently, are hydrogen, an alkyl group, or an aryl group;

R^6 is an aryl group; straight or branched alkyl group having at least 7 carbon atoms; a group having the formula $—(CH_2)_n—Ar$ where n is at least 3, Ar represents an

unsubstituted aryl group, and one or more methylene groups is optionally substituted with a heteroatom; or a carbazole group having the formula



where R^7, R^8, R^9, and R^{10}, independently, are hydrogen, an alkyl group, or an aryl group; n is at least 3; and one or more methylene groups is optionally substituted with a heteroatom, with the proviso that when R^3 is hydrogen, R^6 is not an aryl group;

(b) a charge generating compound; and

(c) an electroconductive substrate.

3. An organic photoreceptor according to claim **1** comprising:

(a) a charge transport layer comprising at least one of said charge transport compounds and a polymeric binder;

(b) a charge generating layer comprising said charge generating compound and a polymeric binder; and

(c) said electroconducting substrate.

US 6,340,549 B1

TONER FOR THE DEVELOPMENT OF ELECTROSTATIC IMAGE, PROCESS FOR THE PREPARATION THEREOF, DEVELOPER FOR THE DEVELOPMENT OF ELECTROSTATIC IMAGE AND PROCESS FOR THE FORMATION OF IMAGE

Hideo Maehata; Yasuo Matsumura; Hisae Yoshizawa, and Masaaki Suwabe, all of Minamiashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 15, 2000, Appl. No. 663,098

Claims priority, application Japan, Mar. 15, 2000, 12-071570

Int. Cl. G03G *9/10*

U.S. Cl. 430—111.4 **24 Claims**

1. A toner for the development of an electrostatic image comprising:

toner particles containing a binder resin and a colorant, and additive, said additive being agglomerated particles, wherein

said agglomerated particles are made of (i) a particulate resin alone, (ii) a particulate lubricant alone or (iii) at least two particulate materials selected from the group consisting of particulate resin, particulate lubricant and inorganic particulate material, and have a shape factor of 130 or more as represented by the following equation and a volume-average particle diameter of from 0.5 μm to 10 μm:

$$\text{Shape factor}=(ML^2/A)\times(\pi/4)\times 100$$

wherein ML represents the absolute maximum length of agglomerated particles, and A represents the projected area of agglomerated particles.

US 6,340,550 B2

IMAGING TRANSFER SYSTEM AND PROCESS FOR TRANSFERRING IMAGE AND NON-IMAGE AREAS THEREOF TO A RECEPTOR ELEMENT

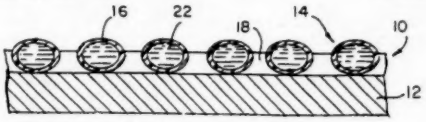
Donald S. Hare, Hawley, Pa., and Scott A. Williams, Rochester, N.Y., assignors to Foto-Wear, Inc., Milford, Pa.

Division of application No. 09/539,711, filed on Mar. 31, 2000, which is a division of application No. 08/970,424, filed on Nov. 14, 1997, now Pat. No. 6,265,128, Provisional application No. 60/030,933, filed on Nov. 15, 1996. This application Mar. 21, 2001, Appl. No. 813,167.

This patent is subject to a terminal disclaimer.

Int. Cl. G03C *8/08;8/10;11/12*

U.S. Cl. 430—138 **30 Claims**



1. An imaging system, which comprises:

a support having a front and rear surface, and

at least one layer of radiation or heat sensitive microcapsules or at least one layer of radiation or heat sensitive microcapsules and developer in the same layer or at least one layer of radiation or heat sensitive microcapsules and developer in separate layers, on said front surface of the support, wherein the radiation or heat sensitive microcapsules or developer or radiation or heat sensitive microcapsules and developer are dispersed in a carrier which is capable of transferring and adhering developed image and non-image areas from said front surface of said support upon the application of heat energy to the rear surface of the support, said carrier strips from said front surface of the support by liquefying and releasing from said support when heated, said liquefied carrier providing adherence to a receptor element by flowing onto said receptor element and solidifying thereon, said adherence does not require an external adhesive layer, with the proviso that the carrier is not capable of reacting to form an image, and when the radiation or heat sensitive microcapsules are present together in the same layer as the carrier, the carrier has a particle size which is the same as or smaller than that of the radiation or heat sensitive microcapsules, wherein the carrier is cumulatively present in all layers on said support in an amount from about 15 g/m^2 to about 30 g/m^2, and wherein the carrier is capable of melting, flowing and transferring said image and non-image areas to the receptor at temperatures in the range of from more than 100° C. to about 180° C.

US 6,340,551 B1

POSITIVE TYPE PHOTOSENSITIVE IMAGE-FORMING MATERIAL FOR USE WITH AN INFRARED LASER

Hideo Miyake, and Ikuo Kawauchi, both of Shizuoka-ken, Japan, assignors to Fuji Film Co., Ltd., Minami-Ashigara, Japan

Division of application No. 09/173,719, filed on Oct. 16, 1998. This application Oct. 20, 1999, Appl. No. 421,535.

Claims priority, application Japan, Oct. 11, 1997, 9-285754; Nov. 14, 1997, 9-313778

Int. Cl. G03C *1/52*

U.S. Cl. 430—192 **20 Claims**

1. A positive type photosensitive image-forming material for use with an infrared laser, comprising:

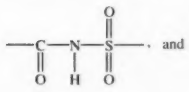
a substrate;

a layer (A) containing not less than 50% by weight of a copolymer which contains, as a copolymerization component, not less than 10% by mol of at least one of the following monomers (a-1) to (a-3):

(a-1) a monomer having in the molecule a sulfonamide group wherein at least one hydrogen atom is linked to a nitrogen atom,

(a-2) a monomer having in the molecule an active imino group represented by the following general formula (I):

(I)



, and

(a-3) a monomer selected from acrylamide, methacrylamide, acrylate, methacrylate and hydroxystyrene, which respectively have a phenolic hydroxyl group; and

a layer (B) containing not less than 50% by weight of an aqueous alkali solution-soluble resin having a phenolic hydroxyl group, said layer (B) being laminated directly on said layer (A) formed on said substrate, wherein at least said layer (B) contains at least one compound which generates heat upon absorbing light.

US 6,340,552 B1

PHOTOSENSITIVE COMPOSITION CONTAINING A DISSOLUTION INHIBITOR AND AN ACID RELEASING COMPOUND

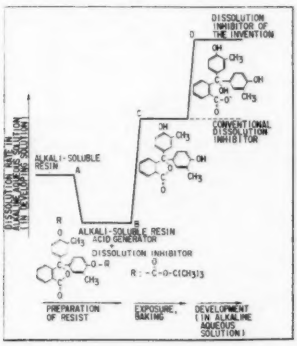
Naoko Kihara, Matsudo; Fumihiko Yuasa, Tokyo; Tohru Ushirogouchi, Yokohama; Tsukasa Tada, Tokyo; Osamu Sasaki, Sagamihara; Takuya Naito, Tokyo, and Satoshi Saito, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of application No. 07/813,694, filed on Dec. 27, 1991, now Pat. No. 5,332,648. This application May 23, 1994, Appl. No. 247,356.

Claims priority, application Japan, Dec. 27, 1990, 2-418772; Jun. 24, 1991, 3-151942

Int. Cl. G03C *1/492*

U.S. Cl. 430—270.1 **4 Claims**



1. A chemical amplification photosensitive composition, comprising:

an alkali-soluble polyvinylphenol resin having a softening point of at least 150° C. and a weight average molecular weight ranging from 3000 to 8000;

an acid-decomposable compound; and

a compound which generates an acid when exposed to a chemical radiation.

US 6,340,553 B1

POSITIVE-WORKING PHOTORESIST COMPOSITION

Katsumi Oomori, Chigasaki; Hiroto Yukawa, Zama; Akiyoshi Yamazaki, Yokohama; Kazuo Tani, Kanagawa-ken; Yohei Kinoshita, Sagamihara, and Tomotaka Yamada, Atsugi, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa-ken, Japan

Filed Jun. 2, 2000, Appl. No. 585,616

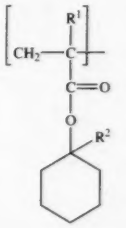
Claims priority, application Japan, Jun. 2, 1999, 11-154908

Int. Cl. G03F *7/004*

U.S. Cl. 430—270.1 **14 Claims**

1. A positive-working chemical-amplification photoresist composition which comprises, as a uniform solution in an organic solvent:

(A) a resinous ingredient capable of being imparted with an increase in solubility in an aqueous alkaline solution by interacting with an acid and consisting essentially of (a) hydroxystyrene units or hydroxy-α-methylstyrene units, (b) styrene units and (c) 1-alkylcyclohexyl (meth)acrylate units represented by the general formula



in which R^1 is a hydrogen atom or a methyl group and R^2 is an alkyl group having 1 to 5 carbon atoms, and wherein component (A) is a combination of a first copolymeric resin consisting essentially of the monomeric units (a), (b) and (c) in molar fractions of 50 to 70%, 10 to 30% and 10 to 20%, respectively, and a second copolymeric resin consisting essentially of the monomeric units (a), (b) and (c) in molar fractions of 50 to 70%, 20 to 40% and 2 to 10%, respectively, in a weight proportion in the range from 90:10 to 50:50;

(B) a radiation-sensitive acid-generating agent capable of releasing an acid by irradiation with actinic rays in an amount in the range from 1 to 10 parts by weight per 100 parts by weight of the component (A).

US 6,340,554 B1

RADIATION-SENSITIVE PLANOGRAPHIC PRINTING PLATE

Koichi Kawamura; Kazuo Maemoto; Sumiaki Yamasaki; Tadahiro Sorori; Hiroshi Tashiro, and Kiyotaka Fukino, all of Shizuoka-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Division of application No. 09/152,517, filed on Sep. 14, 1998, now Pat. No. 6,114,083. This application Jun. 16, 2000, Appl. No. 596,051.

Claims priority, application Japan, Sep. 12, 1997, 9-248994; Feb. 3, 1998, 10-22406; Feb. 25, 1998, 10-43921; Mar. 25, 1998, 10-77460; Mar. 31, 1998, 10-87818; Apr. 24, 1998, 10-115354

This patent is subject to a terminal disclaimer.

Int. Cl. G03F *7/004*

U.S. Cl. 430—270.1 **3 Claims**

1. A photosensitive and heat-sensitive planographic printing plate having on a support a photosensitive layer containing:

a plurality of surface-modified water-insoluble particles; and

a reaction product of:

a compound having in a molecule thereof at least one functional group selected from among a sulfonic acid ester group, a disulfone group, a sulfonimide group, and an alkoxyalkyl ester group and at least one functional group

selected from among —OH, —NH_2, —COOH, —NH—CO—R_3, and —$Si(OR_4)_3$, wherein R_3 and R_4 each represents an alkyl group or an aryl group and wherein R_3 and R_4 may be the same or different in cases in which both R_3 and R_4 are present in the compound; and

a hydrolytic polymerizable compound represented by the following formula (1):

$$(R_1)_n—X—(OR_2)_{4-n} \quad (1)$$

wherein R_1 and R_2, which may be the same or different, each represents an alkyl group or an aryl group; X represents Si, Al, Ti, or Zr;

and n represents an integer from 0 to 2,

wherein, a group(s) that changes from a hydrophobic property to a hydrophilic property due to radiation or heat, bonds to a solid surface of said surface-modified water-insoluble particles.

US 6,340,555 B1

INFORMATION RECORDING MEDIUM AND INFORMATION RECORDING AND REPRODUCING APPARATUS USING THE SAME

Makoto Miyamoto, Ome; Motoyasu Terao; Yukio Fukui, both of Tokyo; Nobuhiro Tokushuku, Yokohama; Keikichi Andoo, Musashino; Tetsuya Nishida, Tokyo; Akemi Hirotsune, Higashimurayama; Yasushi Miyauchi, Akishima, and Koichi Moritani, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

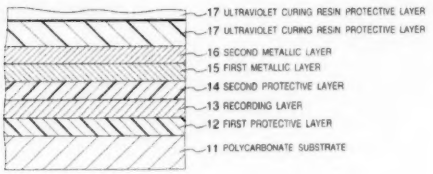
Continuation of application No. 08/978,043, filed on Nov. 25, 1997, now Pat. No. 6,132,932. This application Aug. 15, 2000, Appl. No. 637,879.

Claims priority, application Japan, Nov. 25, 1996, 8-313325; Dec. 9, 1996, 8-328183

This patent is subject to a terminal disclaimer.

Int. Cl. G11B *7/24*

U.S. Cl. 430—270.13 **24 Claims**


17 ULTRAVIOLET CURING RESIN PROTECTIVE LAYER
17 ULTRAVIOLET CURING RESIN PROTECTIVE LAYER
16 SECOND METALLIC LAYER
15 FIRST METALLIC LAYER
14 SECOND PROTECTIVE LAYER
13 RECORDING LAYER
12 FIRST PROTECTIVE LAYER
11 POLYCARBONATE SUBSTRATE

1. An information recording medium comprising:

a recording layer for recording information in the form of a recording mark based on atomic arrangement change and/or electronic state change caused by irradiation of an energy beam, said recording mark being reproduced by irradiating the energy beam on the recording mark; and

first and second metallic layers formed as opposed to an energy beam incident side of said recording layer and having different compositions,

wherein said first metallic layer is disposed closer to said recording layer and contains at least one of Al, Cu, Ag, Au, Pt and Pd as its main component and a sum of contents of these atoms is 60% or more,

wherein said second metallic layer contains at least one of Al, Cu, Ag, Au, Pt and Pd as its main component, and a sum of contents of these atoms in said second metallic layer is larger than that of contents of these atoms in said first metallic layer, and

wherein said first metallic layer also includes at least one element selected from the group consisting of Ti, Cr, Co, Ni, Mg, Si, V, Ca, Fe, Zn, Zr, Nb, Mo, Rh, Sn, Sb, Te, Ta, W, Ir, Pb, B and C, and

further comprising a transparent substrate on said energy beam incident side, and first and second protective layers disposed between said transparent substrate and said first metallic layer, said recording layer being disposed between said first and second protective layers,

wherein said second metallic layer has an Al content of 90% or more, and

wherein a thickness of said second metallic layer is not smaller than 50 nm and not larger than 250 nm.

US 6,340,556 B1

TAILORING OF LINEWIDTH THROUGH ELECTRON BEAM POST EXPOSURE

Selmer Wong, San Diego, Calif., assignor to Electron Vision Corporation, San Diego, Calif.

Provisional application No. 60/147,114, filed on Aug. 4, 1999. This application Jun. 8, 2000, Appl. No. 590,065.

Int. Cl. G03C *5/00*

U.S. Cl. 430—296 **27 Claims**

1. A process for reducing the linewidth of a photoresist image which comprises:

(a) coating and drying a photosensitive composition onto a substrate, which photosensitive composition comprises

(i) at least one water insoluble, acid decomposable polymer, wherein said polymer is present in the photosensitive composition in an amount sufficient to form a uniform film of the composition components when it is coated on a substrate and dried;

(ii) at least one photosensitive compound capable of generating an acid upon exposure to sufficient activating energy, said photosensitive compound being present in an amount sufficient to substantially uniformly photosensitize the photosensitive composition;

(b) imagewise exposing the photosensitive composition to sufficient activating energy to cause the photosensitive compound to generate sufficient acid to decompose the polymer in the imagewise exposed areas of the photosensitive composition and produce a latent pattern of lines having a linewidth of from about 100 nm to about 200 nm;

(c) developing the photosensitive composition to thereby remove the exposed nonimage areas and leaving the unexposed image areas of the photosensitive composition in the form of a pattern of lines having a linewidth of from about 100 nm to about 200 nm;

(d) controllably irradiating the image areas of the photosensitive composition to sufficient electron beam radiation to thereby reduce the linewidth by an amount of from about 5% to about 50%.

US 6,340,557 B1

PATTERN FORMATION METHOD

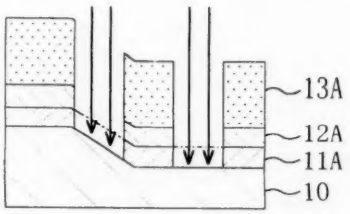
Koji Shimomura, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 25, 1998, Appl. No. 160,329

Claims priority, application Japan, Apr. 8, 1998, 10-095677

Int. Cl. G03C *5/00*

U.S. Cl. 430—316 **5 Claims**



1. A pattern formation method comprising:

depositing an anti-reflection coating of an organic material for absorbing an energy beam on an etching target film formed on a semiconductor substrate;

depositing a photosensitive film on said anti-reflection coating;

forming a patterned photosensitive film by selectively irradiating said photosensitive film with said energy beam and removing an exposed or unexposed portion of said photosensitive film;

forming a patterned anti-reflection coating by conducting dry etching on said anti-reflection coating by using said patterned photosensitive film as a mask and using an etching gas containing sulfur; and

forming a pattern out of said etching target film by conducting dry etching on said etching target film by using said patterned photosensitive film as a mask,

wherein said anti-reflection coating has a thickness which is uniform such that a top face of said anti-reflection coating longitudinally varies in line with a top face of said etching target film, said photosensitive film is made from a photosensitive material including a sulfonyl compound.

US 6,340,558 B1

POLISHING METHOD AND FABRICATION METHOD OF THIN FILM MAGNETIC HEAD

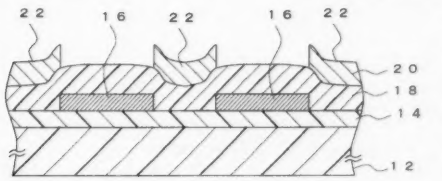
Toshio Kubota; Masumi Sugawara; Takehiro Horinaka, and Fujimi Kimura, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 30, 1999, Appl. No. 450,773

Claims priority, application Japan, Dec. 28, 1998, 10-372213

Int. Cl. B24B *37/00*

U.S. Cl. 430—320 **12 Claims**



10. A fabrication method of a thin film magnetic head having a planarization process for planarizing a surface of a material to be polished by polishing comprising:

the planarization process having a polishing step of polishing the surface after reducing a film thickness at a protruding portion formed on the surface by using a mask layer formed to have almost the same width as the length derived by subtracting twice the film thickness of a bottom shielding layer from the width of the bottom shielding layer.

US 6,340,559 B1

SEMICONDUCTOR DEVELOPING AGENT

Wei-Yang Su; Stephen Lee Sjoberg, both of Austin, and Wheeler Conrad Crawford, Houston, all of Tex., assignors to Huntsman Petrochemical Corporation, Austin, Tex.

Filed Feb. 21, 2001, Appl. No. 789,654

Int. Cl. G03F *7/32;7/42;* **C11D** *9/00*

U.S. Cl. 430—331 **8 Claims**

1. A composition useful as a developing agent in processing semi-conductor based circuit elements and precursors thereof comprising an aqueous solution of tris-(2-hydroxyethyl)methylammonium hydroxide, wherein the concentration of tris-(2-hydroxyethyl) methylammonium hydroxide is between 10.00% and 80.00% by weight based upon the total weight of the composition, including every hundredth percentage therebetween, and further comprising a stabilizer selected from the group consisting of: N-(2-hydroxypropyl)ethylenediamine; N-(2-hydroxyethyl)-1,2-propylenediamine; N-(2-hydroxypropyl)-1,2-propylenediamine; N-(2-hydroxybutyl)ethylenediamine; N-(2-hydroxybutyl)-1,2-propylenediamine; and N-(2-hydroxyethyl)ethylenediamine.

US 6,340,560 B1

AMINOPOLYCARBOXYLIC ACID CHELATING AGENT, HEAVY METAL CHELATE COMPOUND THEREOF, PHOTOGRAPHIC ADDITIVE AND PROCESSING METHOD

Tadashi Inaba; Kiyoshi Morimoto, and Shigeo Hirano, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Division of application No. 08/960,559, filed on Oct. 29, 1997, now Pat. No. 5,885,757. This application Oct. 7, 1998, Appl. No. 167,665.

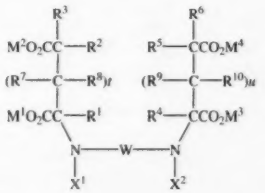
Claims priority, application Japan, Oct. 31, 1996, 8-289635

Int. Cl. G03C *5/38;5/42;* **C07C** *229/04*

U.S. Cl. 430—455 **39 Claims**

1. A compound represented by the following general formula (I):

(I)



wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9 and R^{10} each represent a hydrogen atom aliphatic group, aromatic group or hydroxyl group, W represents a divalent connecting group wherein the main chain has at most 5 carbon atoms, X^1 represents a hydrogen atom, X^2 represents an alkyl group, aralkyl group, hydroxyl group, hydroxyalkyl group or alkoxyalkyl group, M^1, M^2, M^3 and M^4 each represent a hydrogen atom or cation, and t and u each represent 0.

US 6,340,561 B1

HEAT DEVELOPABLE COLOR PHOTOSENSITIVE MATERIAL

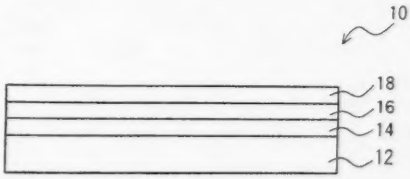
Hideaki Naruse, and Yuki Mizukawa, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 29, 2000, Appl. No. 675,437

Claims priority, application Japan, Sep. 29, 1999, 11-275755

Int. Cl. G03C *8/40;8/12*

U.S. Cl. 430—503 **16 Claims**



1. A heat developable color photosensitive material, said material comprising:

a support having disposed thereon a photosensitive layer including at least two layers, any one of the layers containing a photosensitive silver halide,

a binder,

a metal compound having a solubility at 20° C. of 0.5 grams or less in 100 grams in water,

a complex forming compound, wherein a metal ion of said metal compound is capable of reacting with said complex forming compound to generate a base, and

a carbamoylhydrazine-based compound, one layer containing a substantially colorless coupler which forms a diffusive dye by coupling with the oxidized form of the carbamoylhydrazine-based compound, another layer containing a compound represented by the general formula (1), wherein the hue of the diffusive dye, which is formed by the coupling reaction between the substantially colorless compound and the oxidized form of the carbamoylhydrazine-based compound, and the hue of the diffusive dye residue, which is represented by azo dye in the general formula (1), differ from each other and the general formula (1) being as follows:

$$Cp\text{-}(L)_n\text{-azo dye} \qquad \text{General formula (1)}$$

wherein Cp represents a coupler residue, L represents a bivalent linking group, n is 0 or 1, azo dye represents a diffusive azo dye residue, and $-(L)_n$-azo dye is linked to the active site of coupling.

US 6,340,562 B1

SILVER HALIDE PHOTOGRAPHIC EMULSION AND SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yasuo Taima, Hino, Japan, assignor to Konica Corporation, Japan

Filed Feb. 10, 1999, Appl. No. 248,080
Claims priority, application Japan, Feb. 17, 1998, 10-034703
Int. Cl. G03C *1/015;1/047*
U.S. Cl. 430—599 **19 Claims**

1. A silver halide photographic emulsion comprising silver halide grains prepared by adding an oxazoline type high molecular weight compound capable of forming cross-linkage with gelatin to said silver halide grains before completion of chemical sensitization and after formation of the silver halide grains.

US 6,340,563 B1

TOPOGRAPHIC GENOTYPING

Sydney David Finkelstein, and Patricia Anne Finkelstein, both of 107 W. Eighth St., Aspinwall, Pa. 15215

Continuation of application No. 08/311,553, filed on Sep. 23, 1994, now abandoned. This application Jun. 24, 1996, Appl. No. 667,493.
Int. Cl. C12Q *1/68*
U.S. Cl. 435—6 **2 Claims**

1. A method for topographic genotyping consisting of the steps of:

placing a fixative treated tissue specimen of intact cells having DNA of a patient under a microscope;

inspecting the fixative treated tissue specimen with the microscope for determination of cellular targets for genetic analysis;

choosing a target on the fixative treated tissue specimen based on specific morphologic criteria in turn reflecting specific disease related cellular alterations;

separating a piece from said chosen target;

placing the piece directly into a container containing a lysis buffer after the piece is separated from the target;

performing a single centrifugation on the container with the piece to create a pellet in the container without additional extraction or lysis steps to produce supernatent;

withdrawing supernatant from the pellet in the container without any further extraction steps to obtain DNA sequences from the target so the DNA sequences can be amplified directly without preparation or additional extraction steps of the supernatent;

amplifying the DNA sequences directly from the supernatant without any further preparation of the DNA sequences or extraction of the DNA sequences from the supernatent; and

detecting mutations in the DNA sequences.

US 6,340,564 B1

YHXB

Karen Anne Ingraham, Auburn; Chi Yong So, Havertown; Stephanie Van Horn, Pottstown; Alison Francis Chalker, Trappe; David John Holmes, West Chester; Sanjoy Biswas, Paoli; James Raymond Brown, Berwyn; Martin Karl Russel Burnham, Barto; Patrick Vernon Warren, Coatsville; Richard Lloyd Warren, Blue Bell, and Magdalena Zalacain, West Chester, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Jan. 26, 1999, Appl. No. 237,111
Int. Cl. C12Q *1/68;* **C07H** *21/02;21/04*
U.S. Cl. 435—6 **26 Claims**

1. An isolated polynucleotide segment comprising a first polynucleotide sequence or the full component of the entire length of the first polynucleotide sequence, wherein the first polynucleotide sequence encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO:2.

US 6,340,565 B1

DETERMINING SIGNAL TRANSDUCTION PATHWAYS

Jonathan D. Oliner, Newbury, and Earl Hubbell, Los Angles, both of Calif., assignors to Affymetrix, Inc., Santa Clara, Calif.

Provisional application No. 60/106,912, filed on Nov. 3, 1998. This application Nov. 1, 1999, Appl. No. 431,964.
Int. Cl. C12Q *1/68;* **C12P** *19/34;* **C12N** *15/85*
U.S. Cl. 435—6 **33 Claims**

1. A method of determining candidate functional mediators of a selected gene, comprising the steps of:

a. altering expression of a first selected gene in a first of two populations of identical cells;

b. comparing expression levels of a first set of genes in the two populations of cells;

c. identifying genes in the first set whose expression levels differ between the two populations of cells, wherein the genes identified are candidate functional mediators of the selected gene;

d. altering expression of a second selected gene in one of a third and fourth populations of cells, wherein the third and fourth populations comprise identical cells, wherein the second selected gene is a candidate functional mediator of the first selected gene;

e. comparing expression levels of a second set of genes in the third and fourth populations of cells;

f. identifying genes in the second set whose expression levels differ between the third and fourth populations of cells, wherein the genes identified are candidate functional mediators of the second selected gene.

US 6,340,566 B1
DETECTION AND QUANTITATION OF SINGLE NUCLEOTIDE POLYMORPHISMS, DNA SEQUENCE VARIATIONS, DNA MUTATIONS, DNA DAMAGE AND DNA MISMATCHES

Sandra L. McCutchen-Maloney, Pleasanton, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Provisional application No. 60/192,764, filed on Mar. 28, 2000. This application Aug. 29, 2000, Appl. No. 651,656.

This patent is subject to a terminal disclaimer.

Int. Cl. C12Q *1/68;* **C12P** *19/34;* **G01N** *33/53*

U.S. Cl. 435—6 **100 Claims**

1. A method for detecting a DNA mutation in a DNA molecule, said method comprising the steps of:

a) obtaining a flow cytometry bead to which said DNA molecule is coupled;

b) forming a mixture by mixing said flow cytometry bead and a labeled DNA mutation binding protein, said labeled DNA mutation binding protein being capable of detecting DNA mutations and binding to such mutated DNA;

c) forming a reacted sample by incubating said mixture under conditions wherein if said DNA molecule includes mutated DNA, said DNA mutation binding protein binds to said mutated DNA; and

d) analyzing said reacted sample by detecting the label on the flow cytometry bead to detect the DNA mutation or absence thereof.

US 6,340,567 B1
GENOMICS VIA OPTICAL MAPPING WITH ORDERED RESTRICTION MAPS

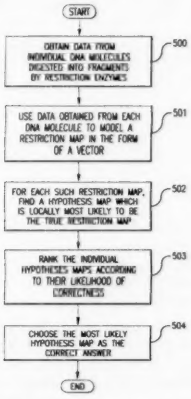
David C. Schwartz, New York; Bhubaneswar Mishra, Great Neck, and Thomas S. Anantharaman, Carmel, all of N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of application No. 08/887,971, filed on Jul. 2, 1997, now Pat. No. 6,174,671. This application Oct. 3, 2000, Appl. No. 678,002.

This patent is subject to a terminal disclaimer.

Int. Cl. C12Q *1/00;1/68;* **C12P** *21/06;1/00;* **G01N** *21/00*

U.S. Cl. 435—6 **19 Claims**


START
OBTAIN DATA FROM INDIVIDUAL DNA MOLECULES DIGESTED INTO FRAGMENTS BY RESTRICTION ENZYMES
500
USE DATA OBTAINED FROM EACH DNA MOLECULE TO MODEL A RESTRICTION MAP IN THE FORM OF A VECTOR
501
FOR EACH SUCH RESTRICTION MAP, FIND A HYPOTHESIS MAP WHICH IS LOCALLY MOST LIKELY TO BE THE TRUE RESTRICTION MAP
502
RANK THE INDIVIDUAL HYPOTHESIS MAPS ACCORDING TO THEIR LIKELIHOOD OF CORRECTNESS
503
CHOOSE THE MOST LIKELY HYPOTHESIS MAP AS THE CORRECT ANSWER
504
END

1. A process for constructing an ordered restriction map based on data obtained from individual DNA molecules digested into fragments by restriction enzymes, comprising the steps of:

(a) modeling from the data obtained from each individual DNA molecule a restriction map in the form of a vector;

(b) for each such restriction map, finding a candidate restriction map, hereinafter referred to as a hypothesis map, which is locally most likely to be the true restriction map; and

(c) ranking the individual hypothesis maps according to their likelihood of correctness.

US 6,340,568 B2
METHOD FOR DETECTING AND CLASSIFYING NUCLEIC ACID HYBRIDIZATION

John Hefti, San Francisco, Calif., assignor to Signature BioScience, Inc., Hayward, Calif.

Continuation of application No. 09/365,581, filed on Aug. 2, 1999, which is a continuation-in-part of application No. 09/243,194, filed on Feb. 1, 1999, Provisional application No. 60/073,445, filed on Feb. 2, 1998, Provisional application No. 60/134,740, filed on May 18, 1999. This application Apr. 19, 2001, Appl. No. 839,860.

Int. Cl. C12Q *1/68*

U.S. Cl. 435—6 **18 Claims**

1. A method for detecting nucleic acid hybridization complexes, comprising:

(1) acquiring a spectrum for a hybridization complex formed between (a) a nucleic acid probe that is electromagnetically coupled to a portion of a signal path wherein one or more said signal path and one or more said probe are present in an apparatus in which said method is carried out, each signal path having a corresponding nucleic acid probe, and wherein a plurality of probes and signal paths, if plurality is present, are optionally arranged as elements of an array, and (2) a nucleic acid target in a sample, by propagating a test signal along said signal path and detecting a response signal for the hybridization complex formed between the probe and target, wherein said propagating step comprises varying said test signal with time; and

(b) examining said spectrum for the presence of a signal which is characteristic for a hybridization complex between said probe and a particular target,

wherein said acquiring takes place without washing unbound nucleic acids from said probe before acquiring said spectrum.

US 6,340,569 B1
MONOCLONAL ANTIBODY AND ANTIGENS SPECIFIC THEREFOR AND METHODS OF USING SAME

Edward D. Ball, and Rui-Kun Zhong, both of San Diego, Calif., assignors to University of Pittsburgh, Pittsburgh, Pa.

Provisional application No. 60/066,906, filed on Nov. 14, 1997, Provisional application No. 60/065,503, filed on Nov. 12, 1997. This application Nov. 12, 1998, Appl. No. 189,926.

Int. Cl. G01N *33/53;* **C12Q** *1/02;* **C12N** *5/06;5/08;* **C07K** *16/28*

U.S. Cl. 435—7.2 **3 Claims**

1. Isolated antigen presenting cells having dendritic cell properties and characteristics wherein said cells are nonadherent to tissue culture plastic and are reactive with monoclonal antibody 5G9 (mAb5G9), wherein said mAb5G9 is produced by a hybridoma designated 5G9 having an A.T.C.C. Accession Number of HB-12430.

3. A method of isolating cells having a dendritic like morphology comprising:

obtaining a sample which contains said cells having a dendritic like morphology;

mixing the sample with monoclonal antibody 5G9 (mAb 5G9), which is capable of reacting with an antigen expressed by the dendritic like cell, wherein said mAb 5G9 is produced by a hybridoma designated 5G9 having an A.T.C.C. Accession Number of HB-12430; and

selecting the cells so as to separate from the sample a purer population of cells having a dendritic cell morphology and which are nonadherent to tissue culture plastic.

US 6,340,570 B1

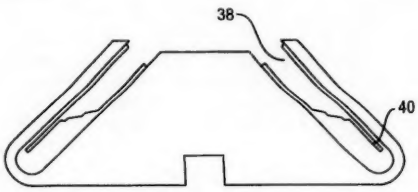
DETECTION AND CHARACTERIZATION OF *MICROORGANISMS*

Norman G. Anderson, Rockville, Md., and N. Leigh Anderson, Washington, D.C., assignors to Large Scale Proteomics Corp., Germantown, Md.

Division of application No. 09/265,541, filed on Mar. 9, 1999, now Pat. No. 6,254,834, Provisional application No. 60/077,472, filed on Mar. 10, 1998. This application May 16, 2000, Appl. No. 571,274.

Int. Cl. G01N *33/53;33/48;1/18;* **C12Q** *1/02;1/24*

U.S. Cl. 435—7.2 **23 Claims**



1. A method for concentrating microorganisms from a biological sample, wherein said method comprises the steps of:

(a) adding a sample containing microorganisms to an ultracentrifuge tube and

(b) centrifuging said sample in said tube to concentrate said microorganisms, said ultracentriftige tube comprising an upper region, a middle region and a lower region, wherein one side of said centrifuge tube comprises a linearly STRAIGHT continuous inner surface at least partially defined by said upper, middle and lower regions, wherein an inner diameter of said upper region is larger than an inner diameter of said middle region and wherein an inner diameter of said middle region is larger than an inner diameter of said lower region and wherein said lower region has a closed bottom.

US 6,340,571 B1

ANTIBODIES SPECIFIC FOR *STAPHYLOCOCCUS AUREUS,* AND USE THEREOF

Sylviane Merlin, Caluire; Nicole Battail; Jean-Pierre Flandrois, both of Lyons, and Gérard Carret, Feyzin, all of *France, assignors to Bio Merieux, Marcy l'Etoile, France*

PCT No. PCT/FR97/00510, § 371 Date Nov. 13, 1997, § 102(e) Date Nov. 13, 1997, PCT Pub. No. WO97/34931, PCT Pub. Date Sep. 25, 1997

PCT Filed Mar. 21, 1997, Appl. No. 952,052

Claims priority, application France, Mar. 21, 1996, 96 03761

Int. Cl. G01N *33/569;* **C12N** *5/06;5/16;* **C07K** *16/00*

U.S. Cl. 435—7.33 **10 Claims**

1. An isolated monoclonal antibody specific for an epitope of *Staphylococcuis acreus* strains of various capsular serotypes, wherein said antibody is selected from type G immunoglobulins, type M immunoglobulins and type A immunoglobulins, and wherein said antibody binds to at least a type 5 capsular scrotype and a type 8 capsular scrotype of said *Staphylococcus aureus* strains, and wherein said antibody is obtained from a hybridoma cell line deposited under No. 96021514 with the ECACC or a hybridoma cell line deposited under No. 96021513 with the ECACC.

US 6,340,572 B1

KIT FOR THE ISOLATION, IDENTIFICATION AND QUANTITATION OF TOXICANTS

James E. Becvar, and Laura E. Becvar, both of El Paso, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of application No. 07/680,678, filed on Apr. 4, 1991, now Pat. No. 6,017,722. This application Sep. 3, 1999, Appl. No. 390,525.

This patent is subject to a terminal disclaimer.

Int. Cl. C12Q *1/66;1/02;* **B01D** *15/08;* **C02F** *1/28;* **G01N** *21/76*

U.S. Cl. 435—8 **8 Claims**

1. A kit for the identification of a toxicant in a sample using a luminescent biological agent, said kit comprising:

a carrier means adapted to receive at least two container means and at least one separation phase matrix in close confinement therewith;

at least one separation phase matrix;

a first container means comprising a luminescent biological agent; and

a second container means comprising a diluent for the luminescent biological agent.

US 6,340,573 B1

CHROMOGENIC SUBSTRATES FOR DETECTING BACTERIAL HYDROLASES

Lyle Armstrong, Northumberland; Arthur James, Newcastle Upon Tyne, both of United Kingdom; Daniel Monget, St Sorlin en Bugey, and Sylvain Orenga, Neuville sur Ain, both of France, assignors to Bio Merieux, Marcy l'Etoile, France

PCT No. PCT/FR99/00781, § 371 Date Nov. 15, 2000, § 102(e) Date Nov. 15, 2000, PCT Pub. No. WO99/51767, PCT Pub. Date Oct. 14, 1999

PCT Filed Apr. 2, 1999, Appl. No. 646,967

Claims priority, application France, Apr. 2, 1998, 98 04332

Int. Cl. C12Q *1/34;1/00;1/37*

U.S. Cl. 435—18 **16 Claims**

1. A chromogenic substrate for detecting the presence of enzymatic activity of at least two enzymes, characterized in that said substrate consists of at least two molecules, a first molecule consisting of a nonchromogenic labeling portion associated with at least one specific target portion of the first enzyme and a second molecule consisting of another nonchromogenic labeling portion associated with a specific target portion of the second enzyme, and in that the nonchromogenic labeling portions, once released, react to form a chromogenic molecule.

US 6,340,574 B1

REGULATED AUTOCRINE GROWTH OF MAMMALIAN CELLS

Sybille Marie Hunt, Epping; Peter Philip Gray, Edgecliff, and Merilyn Joy Sleigh, Neutral Bay, all of Australia, assignors to Unisearch Limited, Kensington NSW, and Commonwealth Scientific and Industrial Research Organization, Campbell, both of Australia

PCT No. PCT/AU96/00472, § 371 Date May 19, 1998, § 102(e) Date May 19, 1998, PCT Pub. No. WO97/05240, PCT Pub. Date Feb. 13, 1997

PCT Filed Jul. 26, 1996, Appl. No. 442

Claims priority, application Australia, Jul. 26, 1995, PN4422

Int. Cl. C12N *15/00*

U.S. Cl. 435—69.1 **11 Claims**

1. A method of producing a desired protein, polypeptide or peptide, comprising the step of:

culturing a mammalian host cell in culture medium under conditions to produce the desired protein, polypeptide or peptide, wherein said host cell includes:

(i) at least one introduced DNA sequencing encoding the desired protein, polypeptide or peptide operably linked to a first inducible promoter sequence,

(ii) at least one introduced DNA sequence encoding a protein, polypeptide and/or peptide factor(s) required for growth of the host cell in said culture medium operably linked to a promoter sequence, the expression of which is regulated by a repressor binding region; and

(iii) at least one introduced DNA sequence encoding a repressor molecule which binds to the repressor binding region, operably linked to a second inducible promoter sequence,

wherein the first and second inducible promoter sequence(s) may be the same or different, wherein said culturing comprises

(i) a first stage of culturing said host cell to a desired cell confluence; and

(ii) a second stage of culturing said host cell in the presence of an inducer of said first and second inducible promoter sequence(s),

to produce the desired protein, polypeptide or peptide.

US 6,340,575 B1

METHODS AND COMPOSITIONS FOR TREATING ABNORMAL CELL GROWTH RELATED TO UNWANTED GUANINE NUCLEOTIDE EXCHANGE FACTOR ACTIVITY

Gideon Bollag, Hercules; Anne Crompton, San Francisco; Anne North, Pleasant Hill; William Roscoe, San Francisco, and Sanju Sharma, Berkeley, all of Calif., assignors to Onyx Pharmaceuticals, Inc., Richmond, Calif.

Provisional application No. 60/049,879, filed on Jun. 17, 1997.

This application May 15, 1998, Appl. No. 79,812.

Int. Cl. C12P *21/00;* **C12N** *15/63;15/85;* **C07H** *21/04*

U.S. Cl. 435—69.1 **15 Claims**

1. An isolated nucleic acid comprising a nucleotide sequence coding for a Rac-GEF polypeptide, wherein the isolated nucleic acid is set forth in SEQ ID NO:1.

US 6,340,576 B1

NUCLEIC ACID MOLECULES RELATED TO CARD-4L AND CARD-4S

John Bertin, Watertown, Mass., assignor to Millennium Pharmaceuticals, Inc., Cambridge, Mass.

Continuation-in-part of application No. 09/019,942, filed on Feb. 6, 1998, now Pat. No. 6,033,855. This application Jun. 17, 1998, Appl. No. 99,041.

Int. Cl. C07H *21/04;* **C12N** *15/11;15/85;15/00*

U.S. Cl. 435—69.1 **35 Claims**

1. An isolated nucleic acid molecule comprising a nucleotide sequence which encodes a polypeptide comprising an amino acid sequence at least 85% identical to the amino acid sequence of SEQ ID NO:8, wherein the percent identity is determined using the ALIGN program in the GCG software package, using a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4, the polypeptide comprising the amino acid sequence of SEQ ID NO:10.

US 6,340,577 B1

PROTEIN FRAGMENTS FOR USE IN PROTEIN TARGETING

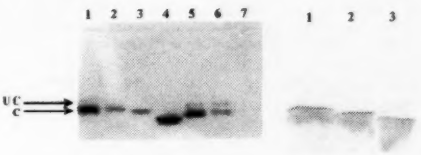
Ralph Graham Hope, and John McLauchlan, both of Glasgow, United Kingdom, assignors to Medical Research Council, London, United Kingdom

Filed Dec. 1, 1998, Appl. No. 203,649

Claims priority, application United Kingdom, Nov. 26, 1998, 9825953

Int. Cl. C12P *21/04;21/08;* **C12Q** *1/70;* **A61K** *38/00;38/04*

U.S. Cl. 435—69.7 **12 Claims**



1. A fusion protein comprising a lipid globule targeting sequence linked to a protein of interest (POI) wherein the targeting sequence comprises a hepatitis C virus (HCV) core protein or fragment or homologue thereof.

US 6,340,578 B1

13C, 15N, 2H LABELED PROTEINS FOR NMR STRUCTURE DETERMINATIONS AND THEIR PREPARATION

Frank Elbert Anderson, III, Gaithersburg; Jonathan Miles Brown, Silver Spring, both of Md.; Philip Edward Coughlin, Wilmington, Del.; Steven William Homans, Dundee; Charles Tobias Weller, Fife, both of United Kingdom; Carrie Ann Zimmerman-Wilson, Ellicott City, and Eddie James Oliver, Jr., Takoma Park, both of Md., assignors to Martek Biosciences Corporation, Columbia, Md.

Division of application No. 09/486,837, filed as application No. PCT/US98/18197, filed on Sep. 2, 1998, which is a continuation-in-part of application No. 08/921,554, filed on Sep. 2, 1997, now Pat. No. 6,111,066. This application Jul. 10, 2000, Appl. No. 613,571.

This patent is subject to a terminal disclaimer.

Int. Cl. C12P *21/00;* **A61K** *38/02;* **C07K** *2/00;1/13;14/00*

U.S. Cl. 435—71.1 **24 Claims**

1. A method for making an isotopically substituted peptidic sequence of 50 or more amino acids, comprising:

(a) providing an isotopically substituted nutrient medium which contains all amino acids required for protein biosynthesis, assimilable sources of carbohydrate, essential minerals and growth factors, wherein at least one species of said amino acids in said nutrient medium contains an isotopic substitution; wherein said isotopic substitution is in the backbone structure but not the side chains of said at least one species of amino acid or in the hydrogen atoms bonded to the α-carbon of said at least one species of amino acid or both; and wherein said isotopic substitution is selected from ^{13}C; ^{15}N; ^{2}H; ^{13}C and ^{2}H; ^{15}N and ^{2}H; ^{13}C and ^{15}N; and ^{13}C, ^{15}N and ^{2}H; with the proviso that when said at least one species of amino acid is glycine, isotopic substitutions of ^{2}H may occur at either or both of the hydrogen atoms bonded to the α-carbon and with the proviso that essentially none of the isotopic substitutions are present in the side chains of any amino acid;

(b) cultivating in said isotopically substituted nutrient medium, under protein-producing conditions, a bacterial, yeast, mammalian or insect cell culture capable of producing said peptidic sequence of 50 or more amino acids; and

(c) recovering said isotopically substituted peptide sequence of 50 or more amino acids from said nutrient medium.

US 6,340,579 B1

GENE ENCODING AN ALPHA-HYDROXY-GAMMA-CARBOXYMUCONIC ACID-EPSILON-SEMIALDEHYDE DEHYDROGENASE

Eiji Masai; Masao Fukuda, both of Nagaoka; Yoshihiro Katayama, Tokyo; Seiji Nishikawa, and Yasushi Hotta, both of Satte, all of Japan, assignors to Cosmo Research Institute, and Cosmo Oil Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP99/03410, § 371 Date Jan. 12, 2001, § 102(e) Date Jan. 12, 2001, PCT Pub. No. WO00/04134, PCT Pub. Date Jan. 27, 2000

PCT Filed Jun. 25, 1999, Appl. No. 720,817

Claims priority, application Japan, Jul. 17, 1998, 10-203200

Int. Cl. C12P *17/06;* **C12N** *15/53*

U.S. Cl. 435—125 **6 Claims**

1. A gene encoding a polypeptide which has an amino acid sequence represented by SEQ NO: 1 or 3 or an amino acid sequence similar to the first-mentioned amino acid sequence except for deletion, substitution or addition of one or more amino acids and which has α-hydroxy-γ-carboxymuconic acid-ε-semialdehyde dehydrogenase activity.

US 6,340,580 B1

METHODS FOR PURIFYING POLYHYDROXY ALKANOATES

Daniel Horowitz, Somerville, Mass., assignor to Metabolix, Inc., Cambridge, Mass.

Provisional application No. 60/133,747, filed on May 12, 1999. This application May 12, 2000, Appl. No. 570,261.

Int. Cl. C12P *7/42;* **C08G** *63/06;63/08*

U.S. Cl. 435—135 **13 Claims**

1. A method for isolating and purifying polyhydroxyalkanoates (PHAs) derived from biomass comprising PHA, the method comprising

extracting PHA from the biomass using at least one solvent while simultaneously subjecting the biomass to a filtration process to remove cells.

US 6,340,581 B1

BIOLOGICAL PRODUCTION OF PRODUCTS FROM WASTE GASES

James L. Gaddy, Fayetteville, Ark., assignor to Bioengineering Resources, Inc., Fayetteville, Ark.

Continuation-in-part of application No. 08/808,088, filed on Feb. 28, 1997, now Pat. No. 5,821,111, which is a continuation of application No. PCT/US96/11146, filed on Jul. 1, 1996, which is a continuation-in-part of application No. 08/674,417, filed on Jul. 1, 1996, now Pat. No. 5,136,577, which is a continuation-in-part of application No. 08/347,512, filed on Nov. 30, 1994, now Pat. No. 5,807,722, which is a continuation of application No. 08/258,446, filed on Jun. 10, 1994, now Pat. No. 5,593,886, which is a continuation of application No. 07/220,686, filed on Mar. 31, 1994, now abandoned, which is a division of application No. 07/968,857, filed on Oct. 30, 1992, now abandoned. This application Dec. 23, 1998, Appl. No. 219,395.

This patent is subject to a terminal disclaimer.

Int. Cl. C12P *7/54;7/08*

U.S. Cl. 435—140 **20 Claims**

1. A process for producing acetic acid comprising the steps of:

(a) providing a continuous flow of an oxygen-free gas substrate selected from the group consisting of:

(i) a gas substrate comprising carbon monoxide,

(ii) a gas substrate comprising carbon monoxide and hydrogen, and

(iii) a gas substrate comprising hydrogen and carbon dioxide into a fermentation reactor;

said fermentation reactor containing an aqueous nutrient medium and an anaerobic acetogenic *C. ljungdahlii* bacterium;

(b) directing a continuous flow of said liquid nutrient medium into said fermentation reactor;

(c) fermenting said nutrient medium, and said gas using said bacterium at a pH in said fermentation reactor of less than about 5.1;

wherein at least 2 g/L of said acetic acid is produced in free acid form in said fermentation reactor in a broth;

(d) continuously removing a portion of said broth containing acetic acid from said fermentation reactor; and

(e) recovering the acetic acid therefrom by contacting said removed broth containing the product with a water-immiscible solvent having an affinity for said acetic acid and optionally distilling said acetic acid from said water-immiscible solvent.

US 6,340,582 B1

PROCESS FOR PREPARING XYLITOL

Shunichi Suzuki; Masakazu Sugiyama; Maiko Mori; Yasuhiro Mihara, and Kenzo Yokozeki, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

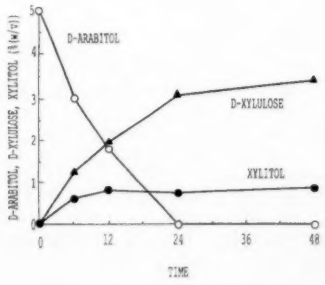
PCT No. PCT/JP98/04673, § 371 Date Apr. 11, 2000, § 102(e) Date Apr. 11, 2000, PCT Pub. No. WO99/20782, PCT Pub. Date Apr. 29, 1999

PCT Filed Oct. 15, 1998, Appl. No. 509,543

Claims priority, application Japan, Oct. 17, 1997, 9-285155; Dec. 1, 1997, 9-330445; Dec. 24, 1997, 9-354674; Jan. 21, 1998, 10-009598; Sep. 11, 1998, 10-258961

Int. Cl. C12P *7/18*

U.S. Cl. 435—158 **10 Claims**



1. A method for producing xylitol comprising the step of reacting a microorganism having an ability to convert D-arabitol to xylitol with D-arabitol to product xylitol,

wherein said microorganism is a microorganism which has an ability to metabolizing a carbon source to produce NADH, and the carbon source is added to a reaction system.

US 6,340,583 B1

ISOLATED HUMAN KINASE PROTEINS, NUCLEIC ACID MOLECULES ENCODING HUMAN KINASE PROTEINS, AND USES THEREOF

Chunhua Yan, Boyds; Karen A. Ketchum, Germantown; Valentina Di Francesco, Rockville, and Ellen M. Beasley, Darnestown, all of Md., assignors to PE Corporation (NY), Norwalk, Conn.

Filed Mar. 22, 2001, Appl. No. 813,817

Int. Cl. C12N *9/12;1/20;15/00;5/00;* **C07H** *21/04*

U.S. Cl. 435—194 **9 Claims**

1. An isolated nucleic acid molecule consisting of a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence that encodes an amino acid sequence shown in SEQ ID NO:2;

(b) a nucleic acid molecule consisting of the nucleic acid sequence of SEQ ID NO:1;

(c) a nucleic acid molecule consisting of the nucleic acid sequence of SEQ ID NO:3; and

(d) a nucleotide sequence that is completely complementary to a nucleotide sequence of (a)–(c).

US 6,340,584 B1

ISOLATED HUMAN KINASE PROTEINS, NUCLEIC ACID MOLECULES ENCODING HUMAN KINASE PROTEINS, AND USES THEREOF

Weiniu Gan, Gaithersburg; Jane Ye, Boyds; Valentina Di Francesco, Rockville, and Ellen M. Beasley, Darnestown, all of Md., assignors to PE Corporation (NY), Norwalk, Conn.

Filed Mar. 27, 2001, Appl. No. 817,180

Int. Cl. C12N *9/12;1/20;15/00;5/00;* **C07H** *21/04*

U.S. Cl. 435—194 **9 Claims**

1. An isolated nucleic acid molecule consisting of a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence that encodes an amino acid sequence shown in SEQ ID NO:2;

(b) a nucleic acid molecule consisting of the nucleic acid sequence of SEQ ID NO:1;

(c) a nucleic acid molecule consisting of the nucleic acid sequence of SEQ ID NO:3; and

(d) a nucleotide sequence that is completely complementary to a nucleotide sequence of (a)–(c).

US 6,340,585 B1

SYNTHETIC MEDIUM FOR CULTIVATING LACTOBACILLUS AND BIFIDOBACTERIA

Marina Elli, Lausanne; Ralf Zink, Le Mont Pelerin; Barbara Marchesini-Huber, Savigny, and Roberto Reniero, Le Mont Pelerin, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Mar. 22, 2000, Appl. No. 532,884

Claims priority, application European Pat. Off., Mar. 23, 1999, 99105855

Int. Cl. C12N *1/20;1/00;1/12*

U.S. Cl. 435—252.9 **11 Claims**

1. A synthetic medium for cultivating a plurality of lactic acid bacteria strains belonging to the genus Lactobacillus and/or Bifidobacteria comprising a carbon source; a buffer; a nitrogen source; one or more of trace elements, antioxidants and vitamins; at least two free bases selected from the group consisting of adenine, cytosine, guanine, thymine, uracil and inosine; one ribonucleoside selected from the group consisting of adenosine, cytidine, guanosine and uridine; and two different 2'-deoxynucleosides selected from the group consisting of 2'-deoxyadenosine, 2'-deoxycytidine, 2'-dioxyguanosine, 2'-deoxyuridine and thymidine, wherein each is present in an amount which in combination is sufficient to promote growth of the bacteria.

US 6,340,586 B1

STRAIN OF THE MICROORGANISM *PENICILLIUM OXALICUM* VAR. ARMENIACA AND ITS APPLICATION

Eduard Sardaryan, Sakařova 1386, 530 09 Pardubice, Czech Rep.

PCT No. PCT/CZ98/00024, § 371 Date Sep. 22, 2000, § 102(e) Date Sep. 22, 2000, PCT Pub. No. WO99/50434, PCT Pub. Date Oct. 7, 1999

PCT Filed May 20, 1998, Appl. No. 646,791

Claims priority, application Czechoslovakia, Mar. 30, 1998, 970-98

Int. Cl. C12N *1/14*

U.S. Cl. 435—256.3 **3 Claims**

1. The isolated strain of *Penicillium oxalicum* var. Armeniaca CCM 8242.

US 6,340,587 B1

PROCESS FOR PREPARING ENANTIOMERICALLY ENRICHED N-DERIVATIZED LACTAMS

Michael John Dawson, Mitchin; Mahmoud Mahmoudian, London, and Christopher John Wallis, Royston, all of United Kingdom, assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/EP98/05291, § 371 Date Feb. 14, 2000, § 102(e) Date Feb. 14, 2000, PCT Pub. No. WO99/10519, PCT Pub. Date Mar. 4, 1999

PCT Filed Aug. 20, 1998, Appl. No. 446,587

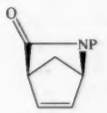
Claims priority, application United Kingdom, Aug. 22, 1997, 9717928

Int. Cl. C07C *1/04*

U.S. Cl. 435—280 **14 Claims**

1. A process for the preparation of substantially enantiomerically pure N-protected (1R,4S)-2-azabicyclo[2.2.1]hept-5-en-3-one of formula (IV)

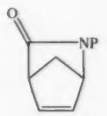
(IV)



wherein P is an activating and protecting group,

wherein a racemic mixture of N-protected (±) 2-azabicyclo[2.2.1]hept-5-en-3-one (V)

(V)



wherein P is an activating or protecting group,

is treated with an acylase enzyme and the unreacted enantiomer of formula (IV) is isolated from the reaction mixture by conventional techniques.

US 6,340,588 B1
MATRICES WITH MEMORIES

Michael P. Nova, Rancho Santa Fe, Calif., and Hanan Potash, Austin, Tex., assignors to Discovery Partners International, Inc., San Diego, Calif.

PCT No. PCT/US96/15999, § 371 Date Sep. 22, 1998, § 102(e) Date Sep. 22, 1998, PCT Pub. No. WO97/12680, PCT Pub. Date Apr. 10, 1997

Continuation-in-part of application No. 08/723,423, filed on Sep. 30, 1996, now Pat. No. 5,961,923, which is a continuation-in-part of application No. 08/709,435, filed on Sep. 6, 1996, now Pat. No. 6,017,496, which is a continuation-in-part of application No. 08/711,426, filed on Sep. 5, 1996, now Pat. No. 6,284,459, which is a continuation-in-part of application No. 08/669,252, filed on Jun. 24, 1996, which is a continuation-in-part of application No. 08/633,410, filed on Jun. 10, 1996, now Pat. No. 6,100,026, which is a continuation-in-part of application No. PCT/US96/06145, filed on Apr. 25, 1996, and a continuation-in-part of application No. 08/639,813, filed on Apr. 2, 1996, now abandoned, which is a continuation-in-part of application No. 08/567,746, filed on Dec. 5, 1995, now Pat. No. 6,025,129, which is a continuation-in-part of application No. 08/538,387, filed on Oct. 3, 1995, now Pat. No. 5,874,214, which is a continuation-in-part of application No. 08/480,147, filed on Jun. 7, 1995, and a continuation-in-part of application No. 08/484,486, filed on Jun. 7, 1995, and a continuation-in-part of application No. 08/484,504, filed on Jun. 7, 1995, now Pat. No. 5,751,629, and a continuation-in-part of application No. 08/480,196, filed on Jun. 7, 1995, now Pat. No. 5,925,562, and a continuation-in-part of application No. 08/473,660, filed on Jun. 7, 1995, said application No. 08/538,387 is a continuation-in-part of application No. 08/428,662, filed on Apr. 25, 1995, now Pat. No. 5,741,462, said application No. 08/480,147 is a continuation-in-part of application No. 08/428,662, said application No. 08/484,486 is a continuation-in-part of application No. 08/428,662, said application No. 08/484,504 is a continuation-in-part of application No. 08/428,662, said application No. 08/480,196 is a continuation-in-part of application No. 08/428,662, said application No. 08/473,660 is a continuation-in-part of application No. 08/428,662. This PCT application Oct. 3, 1996, Appl. No. 51,022.

This patent is subject to a terminal disclaimer.

Int. Cl. C12M *1/34;* **C07K** *16/00;1/00;* **C07M** *21/04;21/00*

U.S. Cl. 435—287.1 **20 Claims**

1. A library of molecules or biological particles comprising:

a plurality of unique molecules or biological particles, wherein each molecule or biological particle is linked to and synthesized on one of a plurality of discrete solid supports, wherein each solid support comprises a combination of:

a matrix comprising a material treated for linking molecules or biological particles and an information surface for imprinting or engraving; and

an optically-readable symbol imprinted or engraved on the information surface, the symbol comprising optically-encoded data including a unique identifier and an orientation indicator for determining orientation of the matrix with respect to an optical reader;

wherein the unique identifier corresponds to the molecule or biological particle that is linked to and synthesized on the material for linking so that each molecule or biological particle of the library is uniquely labeled.

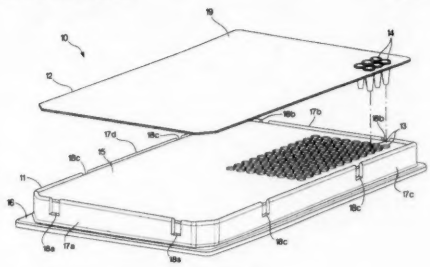
US 6,340,589 B1
THIN-WELL MICROPLATE AND METHODS OF MAKING SAME

Bruce R. Turner, Exeter, N.H., and David E. Titus, Belmont, Mass., assignors to MJ Research, Inc., Waltham, Mass.

Provisional application No. 60/145,381, filed on Jul. 23, 1999. This application Jul. 19, 2000, Appl. No. 619,116.

Int. Cl. C12M *1/34*

U.S. Cl. 435—287.2 **22 Claims**



1. A thin-well microplate comprising:

a skirt and frame portion, constructed of a first material, having a top surface and a bottom surface having a plurality of holes arranged in a first array pattern extending from the top surface to the bottom surface, and walls of equal depth extending from the bottom surface;

a well and deck portion, constructed of a second material, joined with the top surface of the skirt and frame portion to form a unitary plate;

a plurality of sample wells integral with the well and deck portion arranged in the first array pattern such that the plurality of sample wells extend through the plurality of holes in the top surface and bottom surface of the skirt and frame portion.

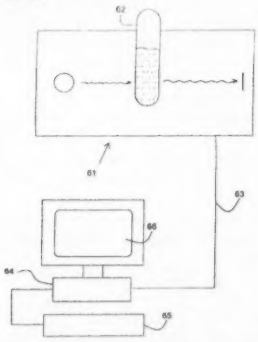
US 6,340,590 B1
VERIFICATION OF THERMAL STERILIZATION

John R. Gillis, 10 Evergreen Dr. Suite E, Bozeman, Mont. 59715, assignor to John R. Gillis, Bozeman, Mont.

Filed Nov. 12, 1998, Appl. No. 190,823

Int. Cl. C12M *1/34*

U.S. Cl. 435—287.4 **11 Claims**



1. A system for indication of microbial sterility of a thermal sterilizer load, upon completion of a thermal sterilizing cycle, including

sterility test ampoule means in which individual test ampoules are interspersed among articles of such a load to be sterilized, with:

such ampoule means being capable of withstanding thermal exposure of such a thermal sterilizer cycle, concurrently with such load, each such ampoule comprising

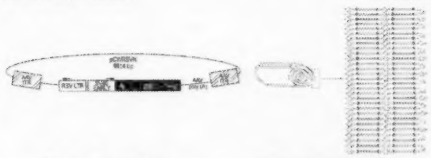
a sealed encapsulating exterior barrier, which:

(i) is impermeable to penetration by liquid, gas, or microbes from externally of such encapsulating barrier,
(ii) transmits radiation in the visible light spectrum, and
(iii) seals a liquid indicator material containing a preselected carbohydrate in solution, which:
(a) provides a quantitatively-measurable visible change responsive to chemical change in such indicator material resulting from thermal exposure in such thermal sterilizer during such a thermal sterilizer cycle, so as to
(b) correlate temperature, resulting from such thermal exposure and microbial kill within such a sterilizer load, such measurable visible chemical change in such indicator material being available directly as such a thermal sterilizer cycle is completed, free of a requirement for a time delay period for microbial growth in order to obtain an indication of microbial sterility.

US 6,340,591 B1
INTEGRATIVE PROTEIN-DNA COCHLEATE FORMULATIONS AND METHODS FOR TRANSFORMING CELLS

David Margolis, Baltimore, Md.; Susan Gould-Fogerite, and Raphael James Mannino, both of Annandale, N.J., assignors to University of Maryland, Baltimore, Md., and University of Medicine and Dentistry of New Jersey, Newark, N.J.

Filed Dec. 14, 1998, Appl. No. 210,578
Int. Cl. C12N *15/63;* **A61K** *48/00;* **C07H** *21/04;* **C07K** *14/00*
U.S. Cl. 435—320.1 **28 Claims**



1. A vector delivery stricture comprising:
a) a cochleate comprising a lipid bilayer element and cations;
b) one or more proteins that facilitate the integration of one or more nucleotide sequences, that can express a molecule, into the genome of a host cell; and
c) a polynucleotide comprising one or more DNA sequences recognized and bound by the one or more proteins and one or more oligonucleotides or polynucleotides, each containing said one or more nucleotide sequences.

US 6,340,592 B1
HUMAN CELL LINES

Bradley Michael John Stringer, Cardiff, United Kingdom, assignor to CellFactors plc, Cambridge, United Kingdom

Division of application No. 09/390,161, filed on Sep. 3, 1999, now Pat. No. 6,197,585, which is a continuation of application No. 08/836,440, filed as application No. PCT/GB95/02591, filed on Nov. 3, 1995, now abandoned. This application Oct. 23, 2000, Appl. No. 694,203.
Claims priority, application United Kingdom, Nov. 8, 1994, 9422523; May 24, 1995, 9510555
Int. Cl. C12N *15/85;15/00;15/11;* **C07H** *21/04*
U.S. Cl. 435—372 **21 Claims**

1. A method for producing a human hypertrophic chondrocyte cell line comprising:
(a) immortalizing a human undifferentiated or precursor chondroprogenitor cell using an immortalising gene which includes or has associated therewith a control means whereby activation of the control means terminates immortalisation and allows differentiation of the undifferentiated or precursor cell,
(b) culturing said immortalised cell in order to produce a homogeneous population of human chondroprogenitor cells,
(c) activating the control means in order to terminate immortalisation and activate differentiation; and
(d) allowing differentiation of said cells so as to produce fully differentiated human hypertrophic chondrocyte cells.

US 6,340,593 B1
PLANT-OPTIMIZED POLYNUCLEOTIDES ENCODING APPROXIMATELY 15 KDA AND APPROXIMATELY 45 KDA PESTICIDAL PROTEINS

Guy A. Cardineau, Poway; Steven J. Stelman, and Kenneth E. Narva, both of San Diego, all of Calif., assignors to Mycogen Corporation, Indianapolis, Ind.

Provisional application No. 60/105,408, filed on Oct. 23, 1998, Provisional application No. 60/105,359, filed on Oct. 23, 1998. This application Oct. 21, 1999, Appl. No. 422,487.
Int. Cl. C12N *1/21;5/14;15/32;15/82*
U.S. Cl. 435—412 **11 Claims**

9. A method if producing a cell wherein said method comprises introducing a modified polynucleotide into said cell, wherein said polynucleotide comprises a nucleotide sequence selected from the group consisting of SEQ ID NO:5 and SEQ ID NO:6, wherein said cell is a plant cell or a microbial cell.

US 6,340,594 B1
PRODUCTION OF DESICCATION-TOLERANT GYMNOSPERM EMBRYOS

Stephen M. Attree, and Lawrence C. Fowke, both of Victoria, Canada, assignors to CellFor, Inc., Victoria, Canada

Continuation of application No. 08/244,725, filed as application No. PCT/CA92/00549, filed on Dec. 18, 1992, now Pat. No. 5,985,667, and a continuation-in-part of application No. 08/159,693, filed on Dec. 1, 1993, now Pat. No. 5,464,769, which is a continuation of application No. 07/810,171, filed on Dec. 19, 1991, now abandoned. This application Dec. 5, 1997, Appl. No. 985,788.
Int. Cl. C12N *5/07*
U.S. Cl. 435—422 **249 Claims**

1. A method of producing viable mature desiccation-tolerant gymnosperm somatic embryos, comprising water stressing immature gymnosperm somatic embryos the presence of (i) a metabolisable carbon source suitable for nourishing the mature embryos, and (ii) a growth regulator influencing embryo development; wherein rate of water loss of the embryos, the type and intensity of the water stressing, the length of time during which the water stressing occurs, and the type and concentration the metabolizable carbon source and growth regulator are selected to obtain viable mature desiccation-tolerant gymnosperm embryos tolerant of desiccation to a moisture content of less than about 55%.

US 6,340,595 B1

HIGH THROUGHPUT SCREENING OF GENE FUNCTION USING ADENOVIRAL LIBRARIES FOR FUNCTIONAL GENOMICS APPLICATIONS

Ronald Vogels, Linschoten; Abraham Bout, Moerkapelle; Helmuth van Es, Hoofddorp, and Govert Schouten, Leiden, all of Netherlands, assignors to Galapagos Genomics N.V., Mechelen, Belgium

Continuation-in-part of application No. 09/097,239, filed on Jun. 12, 1998, now abandoned. This application Jul. 21, 1999, Appl. No. 358,036.

Int. Cl. C12N *15/64*

U.S. Cl. 435—457 **44 Claims**

1. A library of a multitude of unique expressible nucleic acids, said library including:

a multiplicity of compartments, each of said compartments consisting essentially of one or more adenoviral vector comprising at least one unique nucleic acid of said library in an aqueous medium,

wherein said adenoviral vector is capable of introducing said nucleic acid into a host cell, is capable of expressing the product of said nucleic acid in said host cell, and is deleted in a portion of the adenoviral genome necessary for replication thereof in said host cell.

US 6,340,596 B1

REAGENT COMPOSITION FOR MEASURING HYDROGEN SULFIDE AND METHOD FOR MEASURING HYDROGEN SULFIDE

Masami Sugiyama, Tokyo, Japan, assignor to Fujirebio Inc., Tokyo, Japan

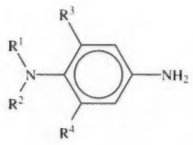
Filed Feb. 11, 1999, Appl. No. 248,316

Claims priority, application Japan, Feb. 12, 1998, 10-044300

Int. Cl. G01N *33/00*

U.S. Cl. 436—121 **20 Claims**

11. A method for measuring hydrogen sulfide in a sample, which comprises reacting an aniline derivative represented by the general formula (I):



wherein R^1 and R^2 independently represent an unsubstituted C_2–C_6 alkyl group or a C_2–C_6 alkyl group substituted with at least one substituent each selected from the group consisting of a sulfo group, a sulfonate group, a carbamoyl group, and a substituted amino group, and R^3 and R^4 independently represent a hydrogen atom, a C_1–C_6 alkyl group or a halogen atom, and an oxidizing agent with hydrogen sulfide in a sample solution under an acidic condition, and

colorimetrically analyzing the resulting solution;

with the proviso that when one of R^3 and R^4 is a hydrogen atom, and the other of R^3 and R^4 is a hydrogen atom or a methyl group, R^1 and R^2 are each a substituted C_2–C_6 alkyl group.

US 6,340,597 B1

ELECTROCHEMICAL BIOSENSORS AND PROCESS FOR THEIR PREPARATION

Josef Svorc, Prievidza; Stanislav Miertus, Bratislava, and Miroslav Stredansky, Modra, all of Slovakia, assignors to Saicom S.r.l., Italy

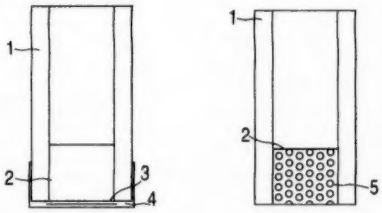
PCT No. PCT/EP96/02919, § 371 Date Dec. 31, 1997, § 102(e) Date Dec. 31, 1997, PCT Pub. No. WO97/02359, PCT Pub. Date Jan. 23, 1997

PCT Filed Jul. 3, 1996, Appl. No. 1,695

Claims priority, application Italy, Jul. 5, 1995, MI95A1441

Int. Cl. G01N *27/00;27/02;33/53;* **C12Q** *1/00;1/68*

U.S. Cl. 436—518 **24 Claims**



1. An electrochemical biosensor comprising:

a) an electro-conducting material, in the form of powder or grains;

b) a chemical mediator;

c) a substance absorbing said chemical mediator; and

d) one solid binding maker, selected from the group consisting of:

linear or branched, saturated or unsaturated hydrocarbons, containing from 12 to 60 carbon atoms optionally substituted with at least a group selected from —OH, —SH, —NH_2, —CO—, —CHO, —SO_3H, —COOH, —OR_1, —SR_1, —NR_1R_2, and —$COOR_1$, wherein R_1 and R_2 are independently hydrocarbon groups, C_1–C_{30}, optionally containing one or more heteroatoms;

esters of fatty acid or a mixture of fatty acids with glycerol; and

esters of a fatty acid or a mixture of fatty acids with cholesterol, said solid binding maker having a melting point comprised between 35° C. and 90° C. and said elements a)–d) constituting a composite transducer, and a biocatalyst which is a redox enzyme, and wherein said biocatalyst is either incorporated in bulk into said composite transducer or it is applied in the form of a layer onto the surface of said composite transducer, said electrochemical biosensor being optionally covered by a membrane, and wherein said electrochemical biosensor comprises, with reference to 100 parts by weight of the sum of the components (a)–(d):

a) from 30 to 60% by weight;

b) from 1 to 10% by weight;

c) from 1 to 20% by weight;

d) from 30 to 60% by weight.

US 6,340,598 B1

APPARATUS FOR MULTICHANNEL FLUORESCENT IMMUNOASSAYS

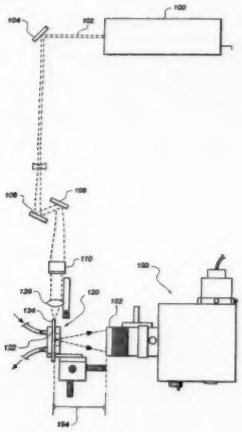
James N. Herron; Douglas A. Christensen; Karin D. Caldwell, all of Salt Lake City, Utah; Vera Janatová, Prague, Czech Rep.; Shao-Chie Huang, and Hsu-Kun Wang, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Division of application No. 08/640,141, filed on Apr. 30, 1996, now Pat. No. 5,846,842, which is a division of application No. 08/064,608, filed on May 18, 1993, now Pat. No. 5,512,492.

This application Dec. 8, 1998, Appl. No. 207,187.

Int. Cl. G01N *33/543*

U.S. Cl. 436—518 **12 Claims**



1. An apparatus for performance of fluorescence immunoassays, comprising:

a light source providing a light beam in a desired wavelength range;

a biosensor including:

an optically conductive waveguide having at least one surface, said surface having capture molecules immobilized thereon, said capture molecules having a binding site which selectively binds a selected analyte;

a slot wherein said optically conductive waveguide is seated;

a gasket positioned within said slot, said gasket forming two or more walls of a sample reservoir formed over said at least one surface of said optically conductive waveguide;

a lens operably disposed for channeling said light beam from said light source to said optically conductive waveguide; and

a detection means for detecting fluorescence emitted by tracer molecules.

US 6,340,599 B1

METAL CHELATE CONTAINING COMPOSITIONS FOR USE IN CHEMILUMINESCENT ASSAYS

Sharat Singh, San Jose, and Edwin F. Ullman, Atherton, both of Calif., assignors to Dade Behring Marburg GmbH, Marburg, Germany

Continuation of application No. 08/488,228, filed on Jun. 7, 1995, now Pat. No. 5,811,311, which is a division of application No. 08/156,181, filed on Nov. 22, 1993, now Pat. No. 5,578,498, which is a continuation-in-part of application No. 07/704,569, filed on May 22, 1991, now Pat. No. 6,251,581.

This application May 11, 1998, Appl. No. 75,264.

This patent is subject to a terminal disclaimer.

Int. Cl. G01N *33/546;33/78;* **C09K** *11/07;11/08*

U.S. Cl. 436—534 **10 Claims**

1. A composition comprising:

(a) a metal chelate comprising europium, terbium, dysprosium, samarium, osmium, or ruthenium, in at least a hexacoordinated state, and

(b) a compound having a structural portion that is a carbon-carbon double bond,

wherein one carbon of the carbon-carbon double bond is substituted with an aryl group and an oxygen group,

wherein the other carbon of the carbon-carbon double bond is substituted with an aryl group and an oxygen, sulfur, or nitrogen, and

wherein one of the aryl groups is electron donating with respect to the other.

US 6,340,600 B1

METHODS FOR FABRICATING LARGE SINGLE-GRAINED FERROELECTRIC THIN FILM, FOR FABRICATING FERROELECTRIC THIN FILM CAPACITOR USING THE SAME, AND FOR FABRICATING FERROELECTRIC MEMORY DEVICE USING THE SAME

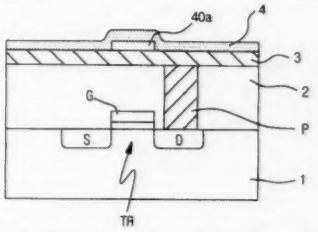
Seung Ki Joo, Seoul, and Jang Sik Lee, Pusan, both of Rep. of Korea, assignors to Seung Kee Joo, Seoul, Rep. of Korea

Filed Apr. 19, 2001, Appl. No. 837,268

Claims priority, application Rep. of Korea, Mar. 6, 2001, 2001-11457

Int. Cl. H01L *21/00*

U.S. Cl. 438—3 **19 Claims**



1. A method for fabricating a single-grained ferroelectric thin film, the method comprising the steps of:

forming a first conductive layer on one side of a semiconductor substrate, by using a conductive material;

forming an artificial nucleation seed in an island form adjacent a position where a ferroelectric thin film is to be formed in the upper portion of the first conductive layer;

forming a ferroelectric thin film on the whole surface of the substrate including the nucleation seed; and

thermally annealing the ferroelectric thin film to thereby grow the ferroelectric thin film positioned in the lateral side of the nucleation seed into a single-grained ferroelectric thin film.

US 6,340,601 B1

METHOD FOR REWORKING COPPER METALLURGY IN SEMICONDUCTOR DEVICES

Thomas F. Curran, Jr., Milton; Timothy C. Krywanczyk, Essex Junction; Michael S. Lube, Richmond; Matthew D. Moon, Jeffersonville; Rock Nadeau, Jericho; Clark D. Reynolds, Colchester; Dean A. Schaffer, Essex Junction; Joel M. Sharrow, South Hero; Paul H. Smith, Jr., Essex Junction; David C. Thomas, Richmond; Eric J. White, Charlotte, and Kenneth H. Yao, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

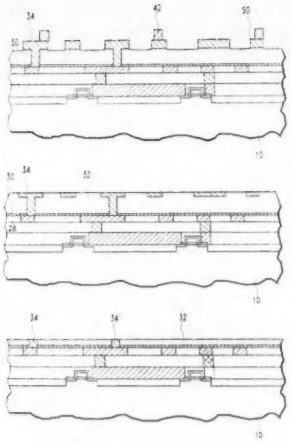
Provisional application No. 60/146,728, filed on Aug. 2, 1999.

This application Dec. 30, 1999, Appl. No. 476,237.

Int. Cl. H01L *21/4763*

U.S. Cl. 438—4 **16 Claims**

1. A method of reworking dual damascene metallurgical interconnects of a semiconductor substrate comprising the steps of:



providing a semiconductor substrate having at least one level of dual damascene interconnection metallurgy comprising a first conductor imbedded in an interlevel dielectric material;

selectively removing at least some of the thickness of said interlevel dielectric to expose at least some of said first conductor;

planarizing any free standing exposed first conductor to remove a substantial portion of said first conductor and retaining a portion of said first conductor;

co-planarizing said first conductor and said interlevel dielectric simultaneously to form a substantially coplanar conductor/insulator surface; and

forming a layer of interconnect metallurgy contacting said first conductor comprising an interlevel dielectric and a second conductor.

US 6,340,602 B1

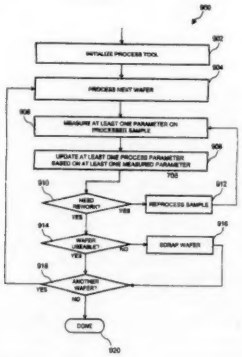
METHOD OF MEASURING MESO-SCALE STRUCTURES ON WAFERS

Kenneth C. Johnson, Santa Clara, and Fred E. Stanke, Cupertino, both of Calif., assignors to Sensys Instruments, Santa Clara, Calif.

Provisional application No. 60/172,851, filed on Dec. 10, 1999, Provisional application No. 60/194,651, filed on Apr. 4, 2000. This application Feb. 12, 2001, Appl. No. 735,286.

Int. Cl. H01L *21/00*

U.S. Cl. 438—7 **20 Claims**



1. A method of measuring at least one parameter associated with a portion of a sample having formed thereon one or more structures with at least two zones each having an associated zone reflectance property, the method comprising the steps of:

a) illuminating the least two zones with broadband light;

b) measuring at least one reflectance property of light reflected from the at least two zones, including a substantial portion of non-specularly scattered light; and

c) fitting a parameterized model to said at least one measured reflectance property,

wherein said parameterized model mixes the zone reflectance properties of the at least two zones to account for partially coherent light interactions between the two zones.

US 6,340,603 B1

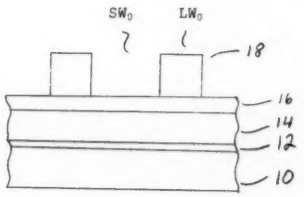
PLASMA EMISSION DETECTION DURING LATERAL *PROCESSING OF PHOTORESIST MASK*

Scott A. Bell, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 27, 2000, Appl. No. 492,364

Int. Cl. H01L *21/00;21/302;* **G01R** *31/26*

U.S. Cl. 438—9 **20 Claims**



1. A method of laterally processing a photoresist mask on a substrate, which method comprises:

depositing a photoresist layer on the substrate;

patterning the photoresist layer to form a photoresist mask having at least one element with a first prescribed width;

laterally processing the photoresist mask having the element to a second prescribed width in a plasma chamber by a plasma having at least one specie with an emission spectrum;

detecting a change in the emission spectrum of the at least one specie in the plasma while simultaneously laterally processing the photoresist mask; and

stopping the lateral processing when the detected change in the emission spectrum of the at least one specie corresponds to the second width.

US 6,340,604 B1

CONTACTOR AND SEMICONDUCTOR DEVICE INSPECTING METHOD

Katsuhiko Tsuura, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of application No. 08/963,141, filed on Nov. 3, 1997, now Pat. No. 6,040,706. This application Dec. 6, 1999, Appl. No. 455,151.

Claims priority, application Japan, Nov. 7, 1996, 8-295077

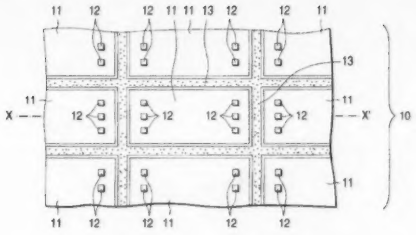
Int. Cl. H01L *21/66*

U.S. Cl. 438—15 **6 Claims**

1. semiconductor device inspecting method comprising the steps of:

a first step of fixing a semiconductor wafer having a plurality of semiconductor chips on an expandable dicing sheet;

a second step of completely cutting said semiconductor wafer together with part of said dicing sheet, to separate said semiconductor chips from one another;



a third step of aligning a plurality of bump electrodes provided in recesses formed in a contactor with pad electrodes on said semiconductor chips, and pressing said bump electrodes against said pad electrodes so that said bump electrodes are electrically connected to said pad electrodes, respectively; and

a fourth step of performing a burn-in test.

US 6,340,605 B1

WAVEGUIDE TYPE OPTICAL INTEGRATED CIRCUIT ELEMENT AND METHOD FOR FABRICATING SAME

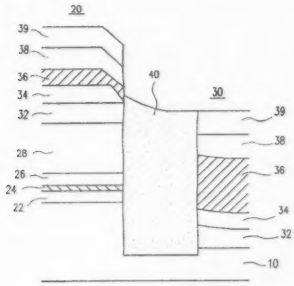
Hidenori Kawanishi, Nara, and Atsushi Shimonaka, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of application No. 09/098,611, filed on Jun. 17, 1998, now Pat. No. 6,163,631. This application Aug. 23, 2000, Appl. No. 645,102.

Claims priority, application Japan, Jun. 20, 1997, 9-164824

Int. Cl. H01L *21/20*

U.S. Cl. 438—31 **17 Claims**



1. A method for fabricating a waveguide type optical integrated circuit element, comprising the steps of:

forming a semiconductor layer constituting a semiconductor laser on a semiconductor substrate;

removing a portion of the semiconductor layer corresponding to a first region by etching so as to have a substantially vertical section;

forming a semiconductor layer constituting an optical waveguide in the first region;

removing a portion including an interface between a light output end face of the semiconductor laser and a light incident face of the optical waveguide corresponding to a second region by etching so as to have a substantially vertical section; and

forming a single semiconductor layer in the second region.

US 6,340,606 B1

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME, CIRCUIT BOARD, AND ELECTRONIC INSTRUMENT

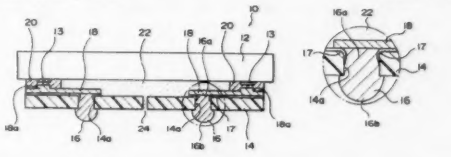
Nobuaki Hashimoto, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of application No. 09/271,336, filed on Mar. 18, 1999, now Pat. No. 6,097,610. This application Jun. 8, 2000, Appl. No. 589,353.

Claims priority, application Japan, Mar. 27, 1998, 10-100580; Feb. 19, 1999, 11-41119

Int. Cl. H01L *21/44;21/48;21/50*

U.S. Cl. 438—106 **22 Claims**



1. A method of manufacturing a semiconductor device, comprising:

a step of providing a substrate with an adhesive material provided on one surface thereof;

a step of carrying out punching from the side of said substrate on which said adhesive material is provided, and in the direction of the opposite side thereof, whereby penetrating holes are formed and a part of said adhesive material is drawn into said penetrating holes;

a step of adhering a conductive member over a particular region on said one surface including said penetrating holes on said substrate through said adhesive material;

a step of providing a material for forming external electrodes on said conductive member, and forming external electrodes through said penetrating holes and the inner side of said part of adhesive material drawn into the penetrating holes to project from the surface opposite to the surface of said substrate on which said conductive member is formed; and

a step of electrically connecting electrodes of a semiconductor chip to said conductive member.

US 6,340,607 B1

PROCESS FOR MOUNTING SEMICONDUCTOR DEVICE AND MOUNTING APPARATUS

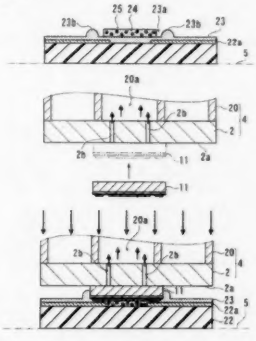
Yukio Yamada, Tochigi, Japan, assignor to Sony Chemicals Corp., Tokyo, Japan

Filed Aug. 3, 2000, Appl. No. 631,282

Claims priority, application Japan, Aug. 9, 1999, 11-225275

Int. Cl. H01L *21/44;21/48;21/50*

U.S. Cl. 438—106 **8 Claims**



1. A process for mounting a semiconductor device by using an anisotropic conductive adhesive film, which process comprising:

the step of tentatively thermocompression bonding a conductive particle-free filmy insulating adhesive onto a wiring board to thereby form an insulating adhesive layer;

the step of forming a concave in said insulating adhesive layer by using a press head provided with a pressing chip of a predetermined size;

the step of putting in the concave of said insulating adhesive layer an anisotropic conductive adhesive film having conductive particles dispersed in an insulating adhesive; and

the step of mounting the semiconductor device having a predetermined electrode at a predetermined position of a compression bonding head and then positioning said semiconductor device and thermocompression bonding to thereby electrically connect the electrode of said semiconductor device to the electrode of said wiring board.

US 6,340,608 B1

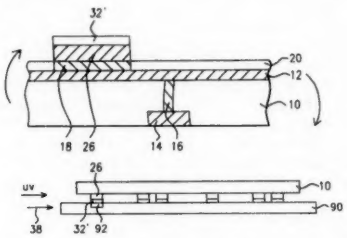
METHOD OF FABRICATING COPPER METAL BUMPS FOR FLIP-CHIP OR CHIP-ON-BOARD IC BONDING ON TERMINATING COPPER PADS

Simon Chooi; Yakub Aliyu; Mei Sheng Zhou; John Sudijono; Subhash Gupta; Sudipto Ranendra Roy; Paul Ho, and Xu Yi, all of Singapore, Singapore, assignors to Chartered Semiconductor Manufacturing Ltd., Singapore, Singapore

Filed Jul. 7, 2000, Appl. No. 612,564

Int. Cl. H01L *21/50*

U.S. Cl. 438—108 **11 Claims**



1. A method of bonding a chip to a substrate, comprising the steps of:

providing a semiconductor chip having an exposed metal terminating pad thereover, and a separate substrate having a corresponding exposed metal track thereover;

forming a metal bump over said exposed metal terminating pad;

forming a photosensitive resin plug over said metal bump;

aligning said metal bump of said semiconductor chip with said corresponding metal track;

mating said photosensitive resin plug over said metal bump with said corresponding metal track; and

exposing said photosensitive resin plug with UV light to cure said photosensitive resin plug, permanently attaching said metal bump of said semiconductor chip to said corresponding metal track of said separate substrate.

US 6,340,609 B1

METHOD OF FORMING THIN FILM TRANSISTOR

Chang-Won Hwang, Sungnam-shi, and Dong-Hwan Kim, Yongin-shi, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

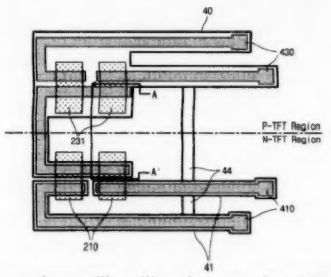
Filed Nov. 13, 2000, Appl. No. 709,648

Claims priority, application Rep. of Korea, Nov. 11, 1999, 99-49938

Int. Cl. H01L *21/00;21/84*

U.S. Cl. 438—151 **14 Claims**

10. A method of forming TFTs for polycrystalline type TFT LCD (thin film transistor liquid crystal display) in which both p type and n type transistors are used, comprising steps of:



forming a polycrystalline silicon layer on glass substrate and patterning the polycrystalline layer to form active regions;

forming gate insulating layer and gate layer on the active regions;

patterning the gate layer to cover one of two impurity (n and p) type transistor areas with the gate layer and to form gate patterns of the other impurity type transistor area and to form subsidiary gate patterns which connect all other gate layer residuals;

implanting ions of the other type impurity with all the gate layer residuals as implanting mask;

forming subsidiary gate layer on the substrate including the gate layer residuals;

patterning the subsidiary gate layer to cover gate patterns and active regions of the other impurity type transistor area and to form gate patterns of the one impurity type area with the subsidiary gate layer and to form subsidiary gate patterns which connect all other subsidiary gate layer residuals;

etching the gate layer with all the subsidiary gate layer residuals as etching mask;

implanting ions of the one type impurity with all the subsidiary gate layer residuals as implanting mask; and

removing all the subsidiary gate layer residuals.

US 6,340,610 B1

THIN-FILM TRANSISTOR AND METHOD OF MAKING SAME

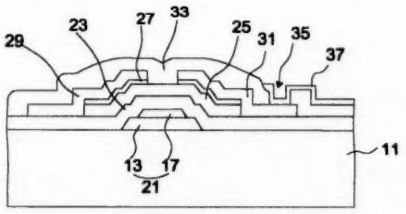
Byung-Chul Ahn, Kyungsangbuk-do, and Hyun-Sik Seo, Kyungki-do, both of Rep. of Korea, assignors to LG. Philips LCD Co., Ltd, Seoul, Rep. of Korea

Division of application No. 08/918,119, filed on Aug. 27, 1997, now Pat. No. 5,905,274. This application Feb. 2, 1999, Appl. No. 243,556.

Claims priority, application Rep. of Korea, Mar. 4, 1997, 97-07010

Int. Cl. H01L *21/00;21/84*

U.S. Cl. 438—158 **10 Claims**



1. A method of making a thin-film transistor, comprising the steps of:

depositing a first metal layer on a substrate, the first metal layer including aluminum;

depositing a second metal layer on the first metal layer directly after the step of depositing the first metal layer;

forming a single photoresist having a predetermined width on the second metal layer;

patterning the second metal layer using the single photoresist as a mask;

patterning the first metal layer using the single photoresist as a mask, the first metal layer being etched to have a width greater than a width of the second metal layer by about 1 to 4 μm to prevent hillock at the sides of the aluminum first metal layer, thus forming a gate having a laminated structure of the first and second metal layers; and

removing the single photoresist; wherein the steps of patterning the second metal layer and the first metal layer each comprise a single step.

US 6,340,611 B1

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

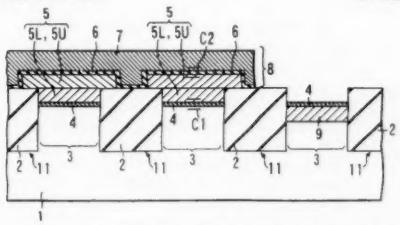
Kazuhiro Shimizu; Seiichi Aritome; Toshiharu Watanabe, all of Yokohama, and Kazuhito Narita, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of application No. 09/097,258, filed on Jun. 15, 1998. This application Jul. 28, 2000, Appl. No. 628,278.

Claims priority, application Japan, Jun. 27, 1997, 9-187539; Nov. 28, 1997, 9-327980

Int. Cl. H01L *21/8238*

U.S. Cl. 438—201 **21 Claims**



1. A method for manufacturing a nonvolatile semiconductor memory device comprising the steps of:

forming a first conductive layer on a semiconductor substrate with a first insulating layer interposed therebetween;

forming a first mask layer having a predetermined first pattern on said first conductive layer;

forming a plurality of trenches in said substrate through said first conductive layer and said first insulating layer by etching with use of said first mask layer as a mask;

forming a second insulating layer in said plurality of trenches such that said insulating layer is formed up to an upper surface of said first mask layer;

exposing said first conductive layer by etching said first mask layer;

forming a second conductive layer on an upper surface of said first conductive layer and on an upper surface of said second insulating layer;

removing parts of said second conductive layer located on said second insulating layer to expose parts of said upper surface of said second insulating layer;

forming a third insulating film on said second conductive layer and said second insulating layer exposed; and

forming a third conductive layer on said third insulating layer.

US 6,340,612 B1

METHOD OF FABRICATING BODY CONTACTED AND BACKGATED TRANSISTORS

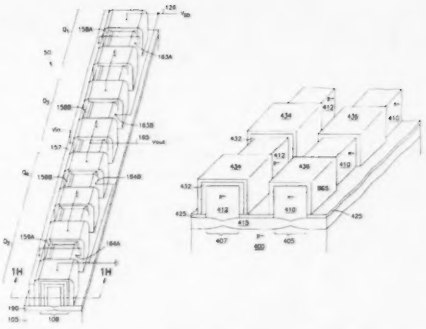
Wendell P. Noble, Milton, Vt., and Leonard Forbes, Corvallis, Oreg., assignors to Micron Technology, Inc., Boise, Id.

Division of application No. 09/050,275, filed on Mar. 30, 1998, now Pat. No. 6,229,342. This application Aug. 29, 2000, Appl. No. 649,983.

Int. Cl. H01L *27/07*

U.S. Cl. 438—213 **33 Claims**

1. A method of fabricating an inverter, the method comprising:



forming a first transistor, the first transistor extending outwardly from a semiconductor substrate, the first transistor having an upper surface and opposing sidewall surfaces, the first transistor having a source/emitter region, a body/base region, and having a collector/drain region;

forming a second transistor, the second transistor extending outwardly from a semiconductor substrate, the second transistor having an upper surface and opposing sidewall surfaces, the second transistor having a source/emitter region, a body/base region, and having a collector/drain region;

forming a third transistor, the third transistor extending outwardly from a semiconductor substrate, the third transistor having an upper surface and opposing sidewall surfaces, the third transistor having a source/emitter region, a body/base region, and having a collector/drain region;

forming a fourth transistor, the fourth transistor extending outwardly from a semiconductor substrate, the fourth transistor having an upper surface and opposing sidewall surfaces, the fourth transistor having a source/emitter region, a body/base region, and having a collector/drain region;

such that the transistors give both metal oxide semiconductor (MOS) type conduction and bipolar junction transistor (BJT) type conduction;

forming an electrical contact between collector/drain regions of the second and third transistors to provide an output for the inverter; and

forming a gate contact, the gate contact interconnecting the transistors wherein the gate contact provides an input to the inverter.

US 6,340,613 B1

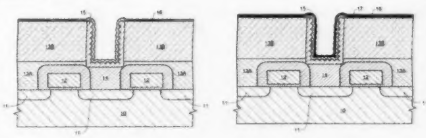
STRUCTURAL INTEGRITY ENHANCEMENT OF DIELECTRIC FILMS

Scott J. DeBoer, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 12, 1998, Appl. No. 191,156

Int. Cl. H01L *21/8242*

U.S. Cl. 438—240 **6 Claims**



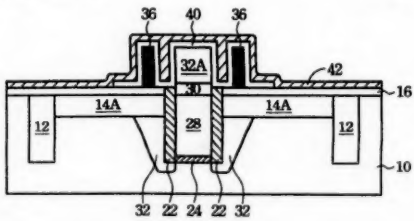
1. A method for reducing the diffusion of oxygen atoms through a dielectric film in a semiconductor fabrication process, said method comprising the steps of:

forming a first dielectric layer that is of such thickness that will allow oxygen atoms to diffuse through it;

exposing said first dielectric layer to wet oxidation during a rapid thermal oxidation step, said rapid thermal oxidation step performed at a temperature and time duration which are

sufficient to oxidize said first dielectric layer to prevent the diffusion of a majority of oxygen atoms through said first dielectric layer.

US 6,340,614 B1
METHOD OF FORMING A DRAM CELL
Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan
Filed Oct. 3, 2000, Appl. No. 678,639
Int. Cl. H01L *21/8242*
U.S. Cl. 438—242 **20 Claims**



1. A method of forming a DRAM cell with a capacitor directly over a transistor having a recessed-gate, the method comprising:

a. forming isolation regions in a semiconductor substrate;

b. forming a heavily-doped region in said semiconductor substrate;

c. forming a first dielectric layer and a second dielectric layer on said semiconductor substrate;

d. forming a trench in said semiconductor substrate by an anisotropic etching process and also forming source/drain regions of said transistor, wherein said trench is prepared for fabricating said recessed-gate;

e. forming first spacers with dopant source material on sidewalls of said trench;

f. forming a gate dielectric layer within said trench;

g. forming a first plug on said gate dielectric layer as a gate plug;

h. forming an isolation film on said first plug;

i. forming source/drain extensions of said transistor;

j. forming a second plug on said isolation film, wherein a top surface of said second plug has the same level with a top surface of said second dielectric layer;

k. removing said second dielectric layer;

l. forming second spacers on sidewalls of said first spacers;

m. forming third spacers on sidewalls of said second spacers, wherein said third spacers is composed of conductive material;

n. removing said second spacers and upper portions of said first spacers; and

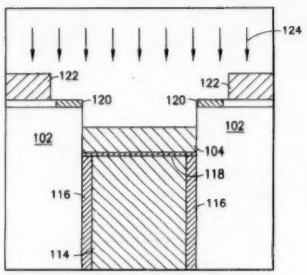
o. forming said capacitor on said second plug and said third spacers.

US 6,340,615 B1
METHOD OF FORMING A TRENCH CAPACITOR DRAM CELL
Sundar K. Iyer, Beacon; Rama Divakaruni, Middletown; Herbert L. Ho, New Windsor; Subramanian Iyer, Mount Kisco, and Babar A. Khan, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 17, 1999, Appl. No. 466,605
Int. Cl. H01L *21/8242*
U.S. Cl. 438—248 **6 Claims**

1. A method of forming a trench capacitor in a dynamic random access memory cell, comprising the steps of:

a) forming a first trench pattern in a layered masking layer on a surface of a semiconductor body;

b) etching a trench into said semiconductor body through said first trench pattern;



c) forming a first capacitor plate disposed in said semiconductor body about said trench;

d) forming a dielectric layer on inner surfaces of said trench;

e) partially filling said trench with semiconductor material to form a capacitor plate within said trench;

f) forming a dielectric collar in an upper portion of said trench;

g) partially filling said dielectric collar with said semiconductor material;

h) removing an upper portion of said dielectric collar above a top surface of said semiconductor material; and

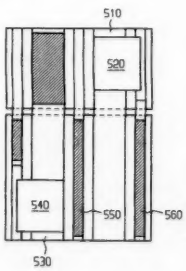
i) forming a strap disposed on said top surface of said semiconductor material; wherein the improvement comprises:

(i) forming a second trench pattern disposed about and larger than said first trench pattern,

(ii) etching an upper masking layer of said layered masking layer through said second trench pattern, stopping on a lower masking layer of said layered masking layer comprising substantially the same material as said dielectric collar, thereby exposing a pull back region of said substrate disposed about said trench and covered by said lower masking layer; and

(iii) implanting said strap and said rim portion with a dopant.

US 6,340,616 B1
METHOD FOR FABRICATING AN INTEGRATED ELECTRONIC CIRCUIT AND INTEGRATED ELECTRONIC CIRCUIT
Karsten Mosig, Villach, Austria; Matthias Stecher, Munich, and Werner Schwetlick, Groebenzell, both of Germany, assignors to Infineon Technologies AG, Munich, Germany
Filed Feb. 25, 2000, Appl. No. 513,616
Claims priority, application Germany, Feb. 25, 1999, 199 08 188
Int. Cl. H01L *21/336*
U.S. Cl. 438—268 **8 Claims**



1. A method for fabricating an integrated electronic circuit, which comprises:

producing electrically active elements in a region of one plane;

applying at least one insulation layer and at least one contact-making layer on the electrically active elements;

subsequently applying at least one connecting wire with a given radius to the contact-making layer; and

producing the contact-making layer with a thickness of at least 10% of the given radius.

US 6,340,617 B1

MANUFACTURE OF SEMICONDUCTOR DEVICE

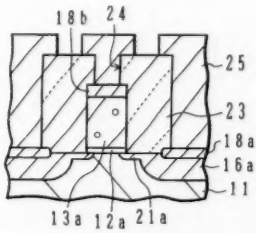
Kenichi Goto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 30, 1999, Appl. No. 450,507

Claims priority, application Japan, Nov. 30, 1998, 10-340114

Int. Cl. H01L *21/336*

U.S. Cl. 438—303 **13 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

(a) forming an insulated gate electrode on a surface of a silicon substrate;

(b) laminating two or more films made of materials having different etching characteristics on the surface of the silicon substrate, the films covering the insulated gate electrode;

(c) anisotropically etching part of the two or more films using at least one of the two or more films which remains as an etching stopper, covering the insulated gate and the silicon substrate thereby forming side wall spacers on side walls of the insulated gate electrode with said part of the two or more films;

(d) implanting impurity ions into the surface of the silicon substrate by using a mask the insulated gate electrode and the side wall spacers;

(e) activating the implanted impurities to a first level;

(f) removing the at-least-one film exposed outside the side wall spacers to expose an upper surface of the insulated gate electrode and a partial surface area of the silicon substrate;

(g) forming a metal film capable of being silicided on the surface of the silicon substrate, the metal film covering the exposed surface of the silicon substrate and the insulated gate electrode;

(h) performing a first silicidation reaction between the metal film and the exposed surface of the silicon substrate;

(i) removing the unreacted portion of the metal film and the remaining at-least-one film under the unreacted portion;

(j) implanting impurity ions shallowly in the surface layer of the silicon substrate by using as a mask the insulated gate electrode; and

(k) activating the shallowly implanted impurities to a second level lower than the first level to perform at a same time a second silicidation reaction for silicide formed by the first silicidation reaction,

wherein the above steps are carried out in this order.

US 6,340,618 B1

RF POWER TRANSISTOR

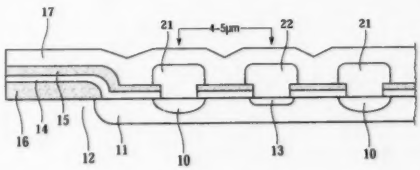
Ted Johansson, Djursholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson (Publ), Sweden

Filed May 16, 2000, Appl. No. 572,399

Claims priority, application Sweden, May 17, 1999, 9901771

Int. Cl. H01L *21/331;21/8228*

U.S. Cl. 438—309 **6 Claims**



1. A method for manufacturing a silicon bipolar power high frequency transistor assuring conditions for maintaining a proper BV_{CER} to avoid collector emitter breakdown, comprising the steps of

arranging an integrated resistor along at least one side of a silicon, bipolar transistor on a semiconductor die constituting substrate for said silicon bipolar transistor; and

connecting said integrated resistor between base and emitter terminals of said silicon bipolar transistor.

US 6,340,619 B1

CAPACITOR AND METHOD OF FABRICATING THE SAME

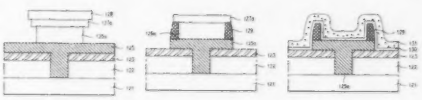
Sang-Gi Ko, Chungcheongbuk-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Filed Jun. 9, 1997, Appl. No. 871,780

Claims priority, application Rep. of Korea, Dec. 26, 1996, 96-72197

Int. Cl. H01L *21/8242*

U.S. Cl. 438—396 **22 Claims**



1. A method of fabricating a capacitor on a substrate, the method comprising the steps of:

forming a first insulating layer on the substrate, the first insulating layer having a contact hole over the substrate;

forming a first conductive layer in the contact hole and on the first insulating layer;

forming a second insulating layer on a portion of the first conductive layer;

forming a third insulating layer on the second insulating layer, the third insulating layer having a width wider than the second insulating layer;

forming a second conductive layer surrounding the second insulating layer, the second conductive layer contacting the first conductive layer and not having a portion below the first conductive layer, and having only a substantially vertically extended portion, whereby the second conductive layer does not have a sharp edged top surface so that a leakage current around the top surface is suppressed;

removing the second and third insulating layers;

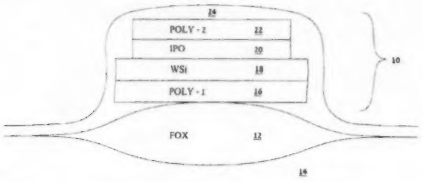
forming a dielectric layer on surfaces of the first and second conductive layers; and

forming a third conductive layer on the dielectric layer.

US 6,340,620 B1
METHOD OF FABRICATING A CAPACITOR

Vladimir Korobov, Kfar Saba; Miriam Grossman, Afula, and Sylvie Rockman, Nesher, all of Israel, assignors to Tower Semiconductor Ltd., Migdal Haemek, Israel

Filed Aug. 31, 1999, Appl. No. 386,349
Int. Cl. H01L *21/20;21/8242*
U.S. Cl. 438—396 14 Claims

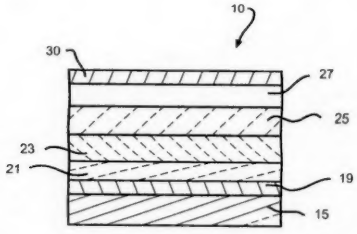


1. A process for fabricating a capacitor, comprising the steps of:
(a) depositing a first polycrystalline semiconductor layer on a substrate;
(b) depositing a layer of a binary metallic conductor on said first polycrystalline semiconductor layer;
(c) annealing said layer of said binary metallic conductor in an oxidizing atmosphere, thereby at least partially oxidizing said layer of said binary metallic conductor; and
(d) depositing a second polycrystalline semiconductor layer on said at least partly oxidized layer of said binary metallic conductor, subsequent to said annealing.

US 6,340,621 B1
THIN FILM CAPACITOR AND METHOD OF MANUFACTURE

Wayne A. Anderson, Orchard Park, N.Y., and Lin Huang Chang, Keelung, Taiwan, assignors to The Research Foundation of State University of New York, Amherst, N.Y.

Provisional application No. 60/030,097, filed on Oct. 30, 1996.
This application Aug. 31, 1999, Appl. No. 387,019.
Int. Cl. H01L *21/20*
U.S. Cl. 438—396 3 Claims

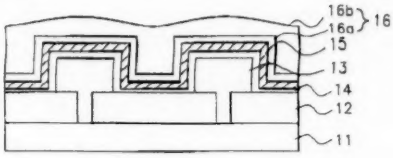


1. A method for preparing a dielectric article comprising forming two or more dielectric materials into film layers arranged in opposing juxtaposition, a first film layer comprising a first dielectric material in microcrystalline configuration, a second film layer comprising said first dielectric material in polycrystalline configuration, a third film layer comprising a ferroelectric second dielectric material, and a fourth film layer comprising said first dielectric material in amorphous configuration, and arranging said opposing layers between upper and lower electrodes.

US 6,340,622 B1
METHOD FOR FABRICATING CAPACITORS OF SEMICONDUCTOR DEVICE

Kee Jeung Lee, Seoul, and Kwang Chul Joo, Kyoungki-do, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Nov. 9, 2000, Appl. No. 708,436
Claims priority, application Rep. of Korea, Nov. 9, 1999, 99-49499
Int. Cl. H01L *21/20*
U.S. Cl. 438—396 20 Claims

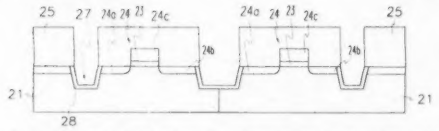


1. A method for fabricating a capacitor of a semiconductor device, comprising the steps of:
forming a lower electrode having an exposed surface on a semiconductor substrate, the lower electrode having a surface composition adjacent the exposed surface and a bulk composition, the surface composition and the bulk composition being substantially the same;
depositing an amorphous TaON thin film over the exposed surface of the lower electrode;
subjecting the deposited amorphous TaON thin film to a first thermal process at a first temperature;
subjecting the TaON thin film to a second thermal process at a second temperature, the second temperature being greater than the first temperature and sufficiently high to form a substantially crystalline TaON dielectric film; and
forming an upper electrode on the TaON dielectric film; wherein the step of subjecting the TaON thin film to a second thermal process comprising a final anneal before the step of forming the upper electrode.

US 6,340,623 B1
METHOD OF FABRICATING SEMICONDUCTOR DEVICE

Keun-Soo Park, Kyungki-do, Rep. of Korea, assignor to Anam Semiconductor, Inc., Seoul, Rep. of Korea, and Amkor Technology, Inc., Chandler, Ariz.

Filed Oct. 20, 2000, Appl. No. 693,466
Claims priority, application Rep. of Korea, Oct. 25, 1999, 99-46407
Int. Cl. H01L *21/76;21/8244*
U.S. Cl. 438—427 7 Claims



1. A method of fabricating a semiconductor device, the method comprising:
forming a plurality of MOS devices on a semiconductor substrate, each MOS device comprising a source, a drain, and a gate electrode;
forming a first insulating layer on the semiconductor substrate with the MOS devices;
forming a moat pattern on the first insulating layer such that the portions of the first insulating layer placed at device isolation areas are exposed to the outside;
forming trenches at the semiconductor substrate through etching the first insulating layer and the underlying semiconductor

substrate using the moat pattern as a mask, the semiconductor substrate being partially etched to a predetermined depth; and

filling up the trenches through forming a second insulating layer on the etched portions of the semiconductor substrate, and on the first insulating layer.

US 6,340,624 B1

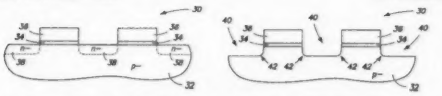
METHOD OF FORMING A CIRCUITRY ISOLATION REGION WITHIN A SEMICONDUCTIVE WAFER

Trung Tri Doan, and Mark Durcan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 09/311,914, filed on May 14, 1999, now Pat. No. 6,100,162. This application Mar. 3, 2000, Appl. No. 518,558.

Int. Cl. H01L *21/76*

U.S. Cl. 438—433 **52 Claims**



1. A method of forming a circuitry isolation region within a semiconductive wafer comprising:

masking an active area region over a semiconductive wafer, the active area region being provided with an impurity doping of a first conductivity type;

providing an impurity of a second conductivity type within the semiconductive wafer proximate the masked active area region, the providing forming an outer wafer region proximate the masked active area region which is doped with the impurity of the second conductivity type;

substantially selectively etching second conductivity type provided semiconductive wafer material of the outer wafer region relative to first conductivity type provided semiconductive wafer material to form a trench proximate the active area region which exposes first conductivity type semiconductive wafer material within the trench through the outer wafer region, said first conductivity type semiconductive wafer material not being exposed at the start of said etching; and

forming electrically insulating material within the trench.

US 6,340,625 B1

METHOD FOR SIMULTANEOUSLY FORMING THINNER AND THICKER PARTS OF A DUAL OXIDE LAYER HAVING VARYING THICKNESSES

Sang Kook Choi; Kyung Hawn Cho; Won Sik An, and Chung Hwan Kwon, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of application No. 09/135,555, filed on Aug. 18, 1998, now Pat. No. 6,207,588. This application Feb. 4, 2000, Appl. No. 497,687.

Claims priority, application Rep. of Korea, Oct. 17, 1997, 97-53362

Int. Cl. H01L *21/30;21/31*

U.S. Cl. 438—459 **8 Claims**

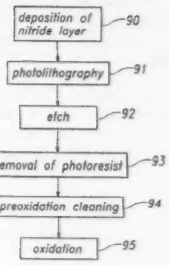
1. A method of forming a dual oxide layer, the method comprising steps of:

depositing a nitride on a silicon substrate to form a nitride layer on the substrate;

removing one portion of the nitride layer to expose an area of the silicon substrate and leave another portion of the nitride layer adjacent said area;

subjecting said area of the substrate and said another portion of the nitride layer to a pre-oxidation cleaning process that cleans said area of the substrate and reduces the thickness of said another portion of the nitride layer;

subsequently simultaneously oxidizing the exposed area of the silicon substrate and said another portion of the nitride layer



to produce a dual oxide layer that is thinner at the nitride layer than at the exposed area of the silicon substrate.

US 6,340,626 B1

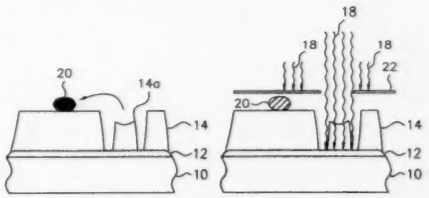
METHOD FOR MAKING A METALLIC PATTERN BY PHOTOLITHOGRAPHY

Kamalesh S. Desai, Hopewell Junction, N.Y.; Brian D. Husson, Matamoras, Pa.; Mathias P. Jeanneret, Hopewell Junction, and Stephen J. Tirch, III, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 2000, Appl. No. 595,631

Int. Cl. H01L *21/322*

U.S. Cl. 438—471 **12 Claims**



1. A method for making an electrical circuit comprising the steps of:

providing a substrate having a seed metal layer on a surface of said substrate;

applying a photoresist layer onto said seed metal layer to cover said seed metal layer;

placing a mask containing a desired electrical circuit pattern over said photoresist layer;

applying light a first time through openings in said mask to expose portions of said photoresist layer not shielded from said light by said electrical circuit pattern of said mask;

developing away a first time those portions of said photoresist layer that have been exposed by said light to uncover portions of said seed metal layer;

moving to new positions contaminants in the photoresist layer that have prevented portions of said photoresist layer from being exposed by said light and have prevented those portions of said photoresist layer from being developed away;

applying light a second time to expose those portions of said photoresist layer that were prevented previously during the first application of light from being exposed by said contaminants;

developing away a second time those portions of said photoresist layer that have been exposed by the second application of said light to uncover additional portions of said seed metal layer;

applying a metal plate to those portions of said seed metal layer uncovered by the developing away of said photoresist layer;

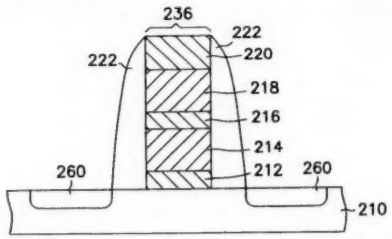
removing remaining portions of said photoresist layer; and

removing portions of said seed metal layer not covered by said metal plate.

US 6,340,627 B1
METHOD OF MAKING A DOPED SILICON DIFFUSION BARRIER REGION

Pai-Hung Pan, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of application No. 08/741,870, filed on Oct. 29, 1996, now Pat. No. 6,080,645. This application Jun. 19, 2000, Appl. No. 597,064.
Int. Cl. H01L *21/3205*
U.S. Cl. 438—585 **25 Claims**



1. A method of manufacturing a sub-0.25 micron semiconductor device on a semiconductor layer; comprising:
forming an oxide layer over the semiconductor layer;
forming a silicon layer over the oxide layer;
forming a doped silicon diffusion barrier region in the silicon layer having low electrical resistance by introducing into the silicon layer at least one dopant selected from the group consisting of:
(1) oxygen, and
(2) nitrogen; and forming a conductor layer directly on the diffusion barrier region.

US 6,340,628 B1
METHOD TO DEPOSIT SIOCH FILMS WITH DIELECTRIC CONSTANT BELOW 3.0

Patrick A. Van Cleemput, Sunnyvale; Ravi Kumar Laxman, San Jose; Jen Shu, Saratoga; Michelle T. Schulberg, Palo Alto, and Bunsen Nie, Fremont, all of Calif., assignors to Novellus Systems, Inc., San Jose, Calif.

Filed Dec. 12, 2000, Appl. No. 735,318
Int. Cl. H01L *21/3205;21/31*
U.S. Cl. 438—586 **22 Claims**

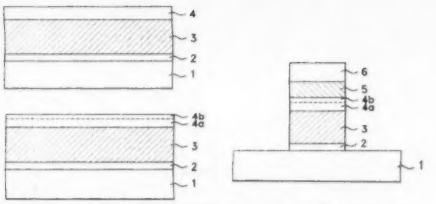
1. A process for depositing a dielectric layer in a chemical vapor deposition (CVD) chamber, comprising:
providing a semiconductor substrate in said CVD chamber;
introducing a precursor gas into said CVD chamber;
introducing a CO_2-containing gas into said CVD chamber; and
depositing said dielectric layer using a CVD process at a deposition temperature of approximately 425° or less.

US 6,340,629 B1
METHOD FOR FORMING GATE ELECTRODES OF SEMICONDUCTOR DEVICE USING A SEPARATED WN LAYER

In Seok Yeo, and Jean Hong Lee, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 17, 1999, Appl. No. 466,752
Claims priority, application Rep. of Korea, Dec. 22, 1998, 98-57228
Int. Cl. H01L *21/3205;21/4763;21/44*
U.S. Cl. 438—592 **6 Claims**

1. A method for forming gate electrodes of semiconductor device comprising the steps of:
forming a gate insulating layer on a semiconductor substrate and a silicon layer on the gate insulating layer;

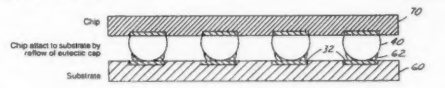


forming a tungsten nitride(WN) layer on the silicon layer;
forming a first tungsten layer at an upper portion of the tungsten nitride layer and a silicon tungsten nitride layer at a lower portion of the tungsten nitride layer by thermally treating the tungsten nitride layer; and
forming a second tungsten layer on the first tungsten layer by using the first tungsten layer as a nucleation layer according to a chemical vapor deposition(CVD) process.

US 6,340,630 B1
METHOD FOR MAKING INTERCONNECT FOR LOW TEMPERATURE CHIP ATTACHMENT

Daniel George Berger, Wappingers Falls, N.Y.; Guy Paul Brouillette, Daudelin; David Hirsch Danovitch, Des Aigles, both of Canada; Peter Alfred Gruber, Mohegan Lake, N.Y.; Bruce Lee Humphrey, Jericho, Vt.; Michael Liehr, Yorktown Heights, N.Y.; William Thomas Motsiff, Essex Junction, Vt., and Carlos Juan Sambucetti, Croton-on-Hudson, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of application No. 08/710,992, filed on Sep. 25, 1996, now Pat. No. 6,127,735. This application Mar. 28, 2000, Appl. No. 536,557.
Int. Cl. A01L *21/44*
U.S. Cl. 438—613 **18 Claims**



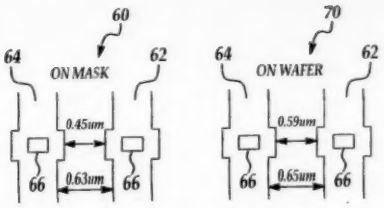
1. A method of forming solder bumps on a semiconductor device comprising the steps of:
depositing a first solder material on the device,
forming a second solder material having a lower flow temperature than the first solder material, and
transferring all said second solder material to at least partially cover an area of the first solder material to be bonded to a second electronic device.

US 6,340,631 B1
METHOD FOR LAYING OUT WIDE METAL LINES WITH EMBEDDED CONTACTS/VIAS

Huang Chih-Po, Chu-Tong; Tsai Hann-Huei, and Lai Tsung-Mu, both of Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin Chu, Taiwan

Filed May 31, 2000, Appl. No. 584,112
Int. Cl. H01L *21/4763*
U.S. Cl. 438—618 **14 Claims**

1. A method for laying out metal lines embedded with contacts/vias on a mask with improved process window comprising the steps of:
laying out a first metal line having zig-zag borders a width of at least 5 μm and a first plurality of contacts/vias along at least one of the opposite edges of the line with said contacts/vias in protruded portions of the zig-zag on a mask, each of said first plurality of contacts/vias being spaced from its immediate adjacent contact/via at a preset spacing, and



laying out a second metal line having zig-zag borders a width of at least 5 μm and a second plurality of contacts/vias along at least one of two opposite edges of the line with said contacts/vias in protruded portions of the zig-zag on said mask, each of said second plurality of contacts/vias being spaced from its immediate adjacent contact/via at said preset spacing, each of said second plurality of contacts/vias being further positioned to align with either a corresponding contact/via in said first metal line or a spacing between two adjacent contacts/vias in said first metal line such that a process window that is larger than a line-to-line spacing for metal lines having straight-line borders is obtained in a subsequent photolithographic process.

US 6,340,632 B1

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

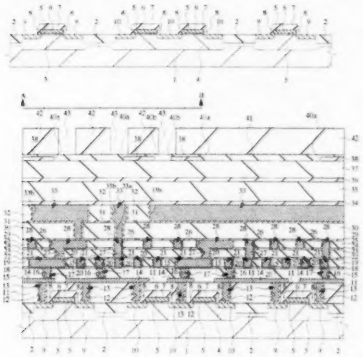
Shinichi Fukada, Hino; Kazuo Nojiri, Higashimurayama; Takashi Yunogami, Niiza; Shoji Hotta, Tokyo; Hideo Aoki, Musashimurayama; Takayuki Oshima, Ome, and Nobuyoshi Kobayashi, Kawagoe, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 2000, Appl. No. 585,629

Claims priority, application Japan, Jun. 4, 1999, 11-158758

Int. Cl. H01L *21/4763*

U.S. Cl. 438—622 **37 Claims**



1. A method of manufacturing a semiconductor device comprising steps of:

(a) forming a first insulating layer on a substrate;

(b) forming a wiring groove pattern layer on said first insulating layer;

(c) forming a hole pattern layer on said wiring groove pattern layer and said first insulating layer;

(d) etching said wiring groove pattern layer and said first insulating layer using said hole pattern layer as a mask to form a hole pattern having a depth into the first insulating layer;

(e) after step (d), removing said hole pattern layer; and

(f) after step (e), etching said first insulating layer using said wiring groove pattern layer as a mask to form a wiring groove pattern into said first insulating layer.

US 6,340,633 B1

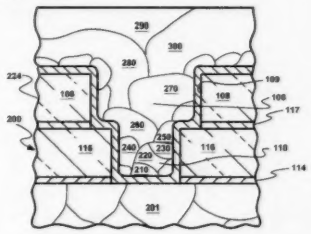
METHOD FOR RAMPED CURRENT DENSITY PLATING OF SEMICONDUCTOR VIAS AND TRENCHES

Sergey D. Lopatin, Santa Clara, Calif., and John A. Iacoponi, Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 26, 1999, Appl. No. 276,839

Int. Cl. H01L *21/4763*

U.S. Cl. 438—625 **11 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

providing a semiconductor with a dielectric layer formed thereon, wherein said dielectric layer overlays a region on said semiconductor;

forming an opening in said dielectric layer, said opening defined by walls of said dielectric layer and exposing a portion of said region on said semiconductor;

forming a seed layer over said dielectric layer and in said opening, including along said walls, said seed layer formed to a thickness insufficient to fill said opening; and

depositing a layer of conductive material in contact with said seed layer by electroplating using ramped, pulsed current densities, said layer of conductive material substantially filling said opening, and said layer of conductive material forms gradually increasing grain size conductive material in said opening in said dielectric layer.

US 6,340,634 B1

METHOD OF MANUFACTURING AN ASSEMBLY OF CONDUCTORS AND A SEMICONDUCTOR DEVICE MANUFACTURED BY MEANS OF SUCH AN ASSEMBLY

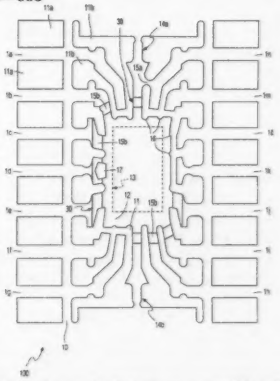
Johannes M. A. M. Van Kempen, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 2000, Appl. No. 510,160

Claims priority, application European Pat. Off., Feb. 23, 1999, 99200504

Int. Cl. H01L *21/44*

U.S. Cl. 438—666 **11 Claims**



1. A method of manufacturing an assembly of conductors, wherein a void is provided in an electroconductive plate, within

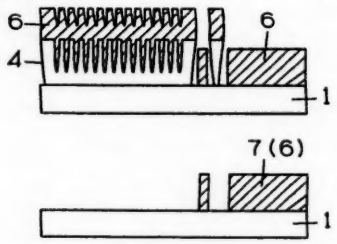
which an island is formed which serves as a carrier for a semiconductor element, and which is connected to the assembly by a part of the plate, a number of strip-shaped conductors being formed within the void, which are situated around the island, and the void being formed such that one of the strip-shaped conductors is connected to the island by means of a further part of the plate, characterized in that the void is formed in such a manner that two or more strip-shaped conductors are electroconductively connected to the island by means of a further part of the plate, and at least one of the further parts of the plate is selectively removed by means of punching.

US 6,340,635 B1

RESIST PATTERN, PROCESS FOR THE FORMATION OF THE SAME, AND PROCESS FOR THE FORMATION OF WIRING PATTERN

Yuji Toyota, Kanazawa; Yoshihiro Koshido, Shiga-ken, and Masayuki Hasegawa, Uji, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 4, 1999, Appl. No. 433,891
Claims priority, application Japan, Nov. 19, 1998, 10-329895
Int. Cl. H01L *21/44*
U.S. Cl. 438—670 **12 Claims**



1. A process for the formation of a wiring pattern, said process comprising the steps of:

applying a resist onto an underplate feed film;

exposing to a light the resist through a photomask having a first pattern whose line width is less than a resolution limit of the light and a second pattern whose line width is equal to or greater than a resolution limit of the light, with an exposure dose which resolves the second pattern completely;

developing the exposed resist to form on the underplate feed film a resist pattern having the second pattern and a plurality of depressions which correspond to the first pattern and is provided on a surface of the resist pattern such that the depressions do not reach a surface of the underplate feed film;

precipitating a plating metal on the feed film in a region not covered by the resist pattern;

stripping the resist pattern after the precipitation; and

removing the feed film selectively in a region not covered by the plating metal.

US 6,340,636 B1

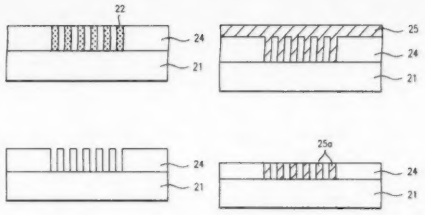
METHOD FOR FORMING METAL LINE IN SEMICONDUCTOR DEVICE

Jin Young Yoon, Seoul, Rep. of Korea, assignor to Hyundai Microelectronics Co., Ltd., Chungcheongbuk, Rep. of Korea

Filed Oct. 28, 1999, Appl. No. 429,560
Claims priority, application Rep. of Korea, Oct. 29, 1998, 98/45924
Int. Cl. H01L *21/44*
U.S. Cl. 438—672 **9 Claims**

1. A method for forming individual metal lines in a semiconductor device, comprising the steps of:

(1) forming a first insulating film and a second insulating film on a substrate;



(2) etching the second insulating film to form a second insulating film pattern;

(3) depositing a third insulating film on the second insulating film pattern;

(4) removing the second insulating film pattern; and

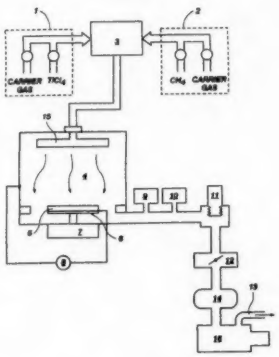
(5) forming a metal line layer in a region having the second insulating film pattern removed therefrom, wherein the metal line layer is planarized to the third insulating film to form the individual metal lines within the third insulating film.

US 6,340,637 B2

CHEMICAL VAPOR DEPOSITION OF TITANIUM FROM TITANIUM TETRACHLORIDE AND HYDROCARBON REACTANTS

Ravi Iyer, and Sujit Sharan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 09/292,993, filed on Apr. 16, 1999, now Pat. No. 6,184,136, which is a continuation of application No. 08/581,765, filed on Jan. 2, 1996, now Pat. No. 5,946,594. This application Dec. 5, 2000, Appl. No. 730,038.
Int. Cl. H01L *21/44*
U.S. Cl. 438—685 **28 Claims**



1. A chemical vapor deposition process for depositing a metal layer on a substrate, comprising:

placing the substrate within a plasma-enhanced deposition chamber;

admitting titanium tetrachloride and at least one hydrocarbon gas into said deposition chamber;

providing a plasma maintained at a power level sufficient to form radicals therein, said plasma having a power level greater than a first ionization energy, but less than a second ionization energy, of the at least one hydrocarbon gas for forming hydrocarbon radicals; and

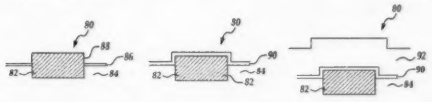
heating the substrate to a temperature sufficient to induce the hydrocarbon radicals to react with chlorine atoms from the titanium tetrachloride leaving titanium metal atoms on at least a portion of a surface of the substrate.

US 6,340,638 B1

METHOD FOR FORMING A PASSIVATION LAYER ON COPPER CONDUCTIVE ELEMENTS

Jong Chen, Taipei; Tze-Liang Lee, and Fan-Keng Yang, both of Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin Chu, Taiwan

Filed Mar. 31, 2000, Appl. No. 539,936
Int. Cl. H01L *21/44*
U.S. Cl. 438—687 9 Claims



1. A method for forming passivation layer on at least one copper conductive element in a semiconductor structure comprising the steps of:

providing a semiconductor device having at least one copper conductive element embedded in a first insulating layer;

planarizing a top surface to expose said at least one copper conductive element in said first insulating layer;

dry etching said top surface of the semiconductor device removing a surface layer of said first insulating layer stopping at an etch-stop layer, said dry etching step forms a first stepped surface between said at least one copper conductive element and said first insulating layer; and

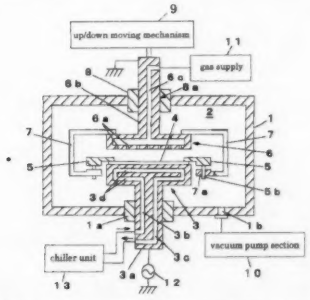
depositing conformally a second insulating layer on top of said semiconductor device forming a second stepped surface substantially similar to said first stepped surface, wherein said first and second stepped surfaces provide an interlock between said at least one copper conductive element and said first and second insulating layers thus avoiding peeling of said passivation layer from said top surface of the semiconductor device.

US 6,340,639 B1

PLASMA PROCESS APPARATUS AND PLASMA PROCESS METHOD FOR SUBSTRATE

Kiyoshi Arita; Tetsuhiro Iwai, and Hiroshi Haji, all of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 24, 2000, Appl. No. 694,669
Claims priority, application Japan, Oct. 26, 1999, 11-303655
Int. Cl. H01L *21/302;21/461*
U.S. Cl. 438—729 18 Claims



1. A plasma process method for processing a substrate disposed on an electrode provided in a hermetically sealed processing chamber, comprising the steps of:

providing a support member integrally on the bottom surface of the substrate, said support member having a thermal expansion coefficient greater than that of the substrate, placing said substrate on an upper surface of the electrode such that said support member contacts said upper surface of said electrode,

pressing the substrate onto the electrode by making contact from above with the substrate at the circumference edge,

generating plasma in a processing chamber by applying a high frequency voltage on the electrode, and

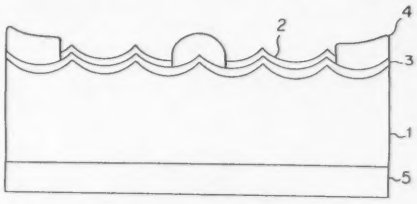
cooling said electrode.

US 6,340,640 B1

SOLAR CELL, A METHOD OF PRODUCING THE SAME AND A SEMICONDUCTOR PRODUCING APPARATUS

Yoichiro Nishimoto; Satoshi Arimoto, and Keisuke Namba, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1997, Appl. No. 933,381
Claims priority, application Japan, Apr. 23, 1997, 9-105760
Int. Cl. H01L *21/302*
U.S. Cl. 438—753 14 Claims



1. A method of producing a solar cell comprising the step of:

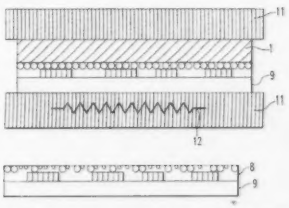
etching a silicon substrate with an aqueous etching solution of mixed acid to form projections and recesses in a surface of the silicon substrate, the etching solution including hydrofluoric acid, nitric acid and an adjusting agent containing at least one of carboxylic acid having a higher molecular weight than acetic acid and a mixture of phosphoric acid and carboxylic acid having a higher molecular weight than acetic acid.

US 6,340,641 B1

SUBSTRATE FLATTENING METHOD AND FILM-COATED SUBSTRATE MADE THEREBY

Ryo Muraguchi; Akira Nakashima; Atsushi Tonai; Michio Kimatsu, all of Kitakyushu; Katsuyuki Machida, Atsugi; Hakaru Kyuragi, Machida, and Kazuo Imai, Atsugi, all of Japan, assignors to Catalysts & Chemicals Industries Co., Ltd., and Nippon Telegraph and Telephone Corporation, both of Japan

PCT No. PCT/JP97/03979, § 371 Date Apr. 29, 1999, § 102(e) Date Apr. 29, 1999, PCT Pub. No. WO98/21750, PCT Pub. Date May 22, 1998
PCT Filed Oct. 31, 1997, Appl. No. 297,343
Claims priority, application Japan, Nov. 11, 1996, 8-298892; Nov. 19, 1996, 8-308427
Int. Cl. H01L *21/31*
U.S. Cl. 438—763 20 Claims



1. A method of planarizing a surface of a substrate having an uneven surface, which comprises the steps of:

forming a coating film containing spherical fine particles on a surface of a smooth substrate;

sticking the surface of the smooth substrate provided with the coating film containing spherical fine particles to the uneven surface of the substrate having an uneven surface; and

transferring the coating film containing spherical fine particles from the surface of the smooth substrate to the uneven surface of the substrate having an uneven surface so that the uneven surface is planarized.

US 6,340,642 B1

PROCESS FOR MANUFACTURING A SILICON SEMICONDUCTOR DEVICE HAVING A REDUCED SURFACE RECOMBINATION VELOCITY

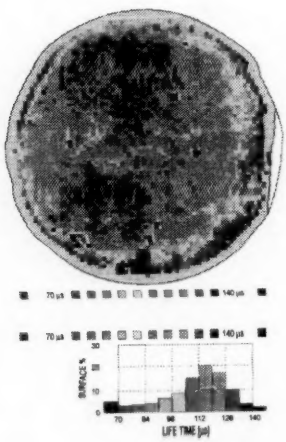
Wolfgang Arndt; Klaus Graff, both of Heilbronn; Alfons Hamberger, Gundelsheim, and Petra Heim, Heilbronn, all of Germany, assignors to Temic Telefunken microelectronics GmbH, Germany

Division of application No. 08/526,556, filed on Sep. 12, 1995, now Pat. No. 5,972,724. This application Nov. 30, 1998, Appl. No. 201,899.

Claims priority, application Germany, Sep. 12, 1994, 44 32 294

Int. Cl. H01L 21/31;21/469;29/12

U.S. Cl. 438—780 4 Claims



1. A process for manufacturing a silicon semiconductor device having a reduced surface recombination velocity of charge carriers within a silicon wafer, comprising:

a. forming a plurality of semiconductor zones in the surface of the silicon wafer for assembling semiconductor components;

b. reducing surface recombination velocity of charge carriers within the silicon wafer by maintaining temperature below *100° C. while sequentially performing the steps of:*

i. cleaning the surface of the silicon wafer to remove oxide therefrom;

ii. drying the surface by blowing a non-oxidizing gas thereon;

iii. directly applying a layer of lacquer onto the surface at a temperature below 100° C., which lacquer is comprised of an organic material selected from the group consisting of a natural resin, cellulose nitrate, an alkyd resin, and a polysiloxane, which lacquer dries by a process selected from the group consisting essentially of (a) solvent evaporation and (b) solvent evaporation and chemical reaction; and

iv. drying the layer of lacquer at a temperature below 100° C. to generate an electrically non-conducting layer and reduce *the surface recombination velocity of charge carriers within* the silicon wafer in which the layer of lacquer contains halogen in a concentration of more than 0.1 volume %; and

c. forming at least one conducting structure on the surface of the layer of lacquer.

US 6,340,643 B2

TREATMENT SOLUTION SUPPLY METHOD

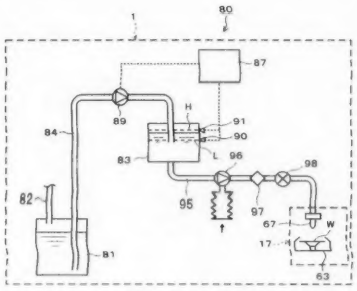
Issei Ueda, Kumamoto, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Filed Feb. 15, 2001, Appl. No. 783,596

Claims priority, application Japan, Feb. 18, 2000, 2000-041561

Int. Cl. H01L 21/31;21/469

U.S. Cl. 438—780 4 Claims



1. A treatment solution supply method for supplying, with a treatment solution in a treatment solution supply source forcibly fed by a pump, said treatment solution on a substrate through a supply path connecting said treatment solution supply source and a discharge nozzle,

wherein a storage portion for storing said treatment solution temporarily is disposed in said supply path between said treatment solution supply source and said pump, and

another pump for supplying said treatment solution to said storage portion is disposed in said supply path between said storage portion and said treatment solution supply source, and comprising:

the step of maintaining the level height of said treatment solution in said storage portion at a predetermined height by supplying said treatment solution to said storage portion by said another pump, wherein said treatment solution is a resist solution.

US 6,340,644 B1

METHOD FOR APPLYING A PROTECTING LACQUER ON A WAFER

Volker Becker, Marxzell; Franz Laermer, Stuttgart, and Andrea Schilp, Schwaebisch Gmuend, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE98/03442, § 371 Date Sep. 20, 2000, § 102(e) Date Sep. 20, 2000, PCT Pub. No. WO99/28954, PCT Pub. Date Jun. 10, 1999

PCT Filed Nov. 23, 1998, Appl. No. 355,299

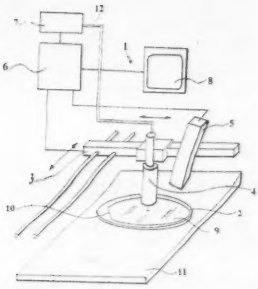
Claims priority, application Germany, Nov. 28, 1997, 197 52 926

Int. Cl. H01L 21/31;21/469

U.S. Cl. 438—782 15 Claims

1. A method for applying a protective resist to a prepatterned wafer, comprising the steps of:

providing a distribution system which includes a holder for the prepatterned wafer, an xy sliding unit having a programming device and a dispensing device having a syringe; and



applying the protective resist to the prepatterned wafer using the distribution system.

US 6,340,645 B1

INTUMESCENT LAMINATES WITH HIGH HEAT TRANSFER RESISTANCE

Heinz Horacek, Linz, and Stefan Pieh, Leonding, both of Austria, assignors to DSM Fine Chemicals Austria Nfg GmbH & CoKG, Linz, Austria

Filed Sep. 2, 1999, Appl. No. 389,062

Claims priority, application Austria, Sep. 4, 1998, 1501/98

Int. Cl. B32B *27/04;27/12;27/24*

U.S. Cl. 442—138 **6 Claims**

1. An intumescent laminate with high heat transfer resistance, which is composed of a glass-fiber web or glass-fiber fabric coated with a three-component intumescent composition comprising

a) a polyol partial phosphate

b) a melamine compound and

c) an inorganic framework-forming compound.

US 6,340,646 B1

COLORED FILM-COATED ULTRAVIOLET/INFRARED ABSORBENT GLASS PLATE AND WINDOW GLASS OF VEHICLE

Yukihito Nagashima; Mitsuhiro Kawazu, and Toshifumi Tsujino, all of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation of application No. PCT/JP98/05039, filed on Nov. 10, 1998. This application Nov. 10, 1999, Appl. No. 437,229.

Claims priority, application Japan, Nov. 13, 1997, 9-312520; Nov. 18, 1997, 9-316852

This patent is subject to a terminal disclaimer.

Int. Cl. C03C *3/095;3/087;* **B32B** *17/00*

U.S. Cl. 501—64 **19 Claims**

1. A colored film-coated ultraviolet/infrared absorbent glass plate consisting of base glass, colorants, and a colored film, said base glass comprising:

65 to 80 wt. % SiO_2;

0 to 5 wt. % Al_2O_3;

0 to 10 wt. % MgO;

5 to 15 wt. % CaO;

10 to 18 wt. % Na_2O;

0 to 5 wt. % K_2O;

5 to 15 wt. % total amount of MgO and CaO;

10 to 20 wt. % total amount of Na_2O and K_2O;

0.05 to 0.3 wt. % of SO_3; and

0 to 5 wt. % B_2O_3.

said colorants comprising:

0.35 to 0.55 wt. % total iron oxide (T-Fe_2O_3) expressed as Fe_2O_3;

0.08 to 0.15 wt. % FeO;

0.8 to 1.5 wt. % CeO_2; and

0 to 0.5 wt. % TiO_2.

FeO expressed as Fe_2O_3 being equal to or more than 20 wt. % and less than 27 wt. % of T-Fe_2O_3,

and said colored film having a red color shade with a thickness between 30 nm and 300 nm and including fine particles of gold and silicon oxide of more than 50 wt. % and equal to or less than 95 wt. %, said colored film being applied onto a surface of the ultraviolet/infrared absorbent glass plate,

wherein said base glass and colorants have following properties: visible light transmittance is equal to or more than 75% when measured by using CIE illumination A, solar energy transmittance is equal to or less than 60%, ultraviolet transmittance specified by ISO is equal to or less than 15%, dominant wavelength is in a range of 495 to 535 nm when measured by using CIE illuminant C, and excitation purity is equal to or less than 2.5% when measured by using the CIE illumination C.

US 6,340,647 B1

GLASS COMPOSITION AND SUBSTRATE FOR INFORMATION RECORDING MEDIA COMPRISING THE SAME

Akihiro Koyama; Shoichi Kishimoto; Junji Kurachi, and Nobuyuki Yamamoto, all of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Apr. 19, 1999, Appl. No. 293,992

Claims priority, application Japan, Apr. 17, 1998, 10-124306

Int. Cl. C03C *3/062;3/085;3/087;* **B32B** *17/00*

U.S. Cl. 501—69 **5 Claims**

1. A glass composition consisting of the following components in terms of mol %:

40 to 55% SiO_2,

10 to less than 20% Al_2O_3,

2 to 10% Li_2O,

0 to 5% Na_2O,

provided that the content of R_2O (R_2O=Li_2O+Na_2O) is from 2 to 10%,

0 to 10% ZrO_2,

5 to 25% MgO,

0 to 25% CaO, and

0 to 6% SrO,

provided that the content of RO (RO=MgO+CaO+SrO) is from more than 15 to 30%.

US 6,340,648 B1

CALCIUM PHOSPHATE POROUS SINTERED BODY AND PRODUCTION THEREOF

Kohichi Imura; Hideo Uemoto; Akimichi Hojo, all of Hadano; Junzo Tanaka, Tsukuba; Masanori Kikuchi, Tsukuba; Yasushi Suetsugu, Tsukuba; Hiraku Yamazaki, Tokyo; Masami Kinoshita, Tokyo, and Nobuaki Minowa, Tokyo, all of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo; National Institute for Research in Inorganic Materials-Science and Technology Agency, Tsukuba, and Toshiba Denko Co., Ltd., Tokyo, all of Japan

Filed Apr. 13, 2000, Appl. No. 548,742

Claims priority, application Japan, Apr. 13, 1999, 11-105579

Int. Cl. C07B *25/35;* **C04B** *38/06;35/447*

U.S. Cl. 501—80 **14 Claims**

1. A calcium phosphate porous sintered body having a porous structure which comprises roughly spherical pores communicating with one another substantially throughout the body with a porosity of 55% or more and 90% or less, and has an average diameter of the inter-pore communicating parts of 50 μm or more in average, a pore diameter of 150 μm or more, and a three-point bending strength of 5 MPa or more.

US 6,340,649 B1

COMPOSITION OF DIELECTRIC CERAMICS AND PRODUCING METHOD THEREOF

Tomoaki Kawata, Tokyo; Akira Nakamura; Toshio Sakurai, both of Chiba, and Aya Fukuhara, Tokyo, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 15, 2000, Appl. No. 525,942

Claims priority, application Japan, Mar. 16, 1999, 11-070005; Jul. 22, 1999, 11-207461

Int. Cl. C04B *35/468*

U.S. Cl. 501—138 **9 Claims**

1. Composition of dielectric ceramics, comprising:

a main component expressed with a general formula of $xBaO{\cdot}yNd_2O_3{\cdot}zTiO_2$ (provided that the general formula has the relation of $6 \leqq x \leqq 23$, $13 \leqq y \leqq 30$, $64 \leqq z \leqq 68$ and $x+y+z=100$); and

sub-components containing Cu oxides 0.1 to 3.0 wt % in terms of CuO, Zn oxide 0.1 to 4.0 wt % in terms of ZnO, and B oxide 0.1 to 3.0 wt % in term of B_2O_3.

4. A method for producing composition of dielectric ceramics, comprising the steps of:

(1) mixing raw materials of BaO, Nd_2O_3 and TiO_2, calcining them at temperature of 1100° C. or higher and manufacturing powders of base materials expressed with a general formula of $xBaO{\cdot}yNd_2O_3{\cdot}zTiO_2$ (provided that the general formula has the relation of $6 \leqq x \leqq 23$, $13 \leqq y \leqq 30$, $64 \leqq z \leqq 68$ and $x+y+z=100$),

(2) again calcining, at temperature of sintering temperature or lower of the base material powders, said powders mixed such that a sub-component in relation with the base powders fall into ranges of Cu oxides 0.1 to 3.0 wt % in terms of CuO, Zn oxide 0.1 to 4.0 wt % in terms of ZnO, and B oxide 0.1 to 3.0 wt % in term of B_2O_3; and

(3) pulverizing the calcined powders until predetermined powder diameter.

US 6,340,650 B1

CERAMIC PRODUCTS MADE FROM WASTE GLASS, RAW BATCH FORMULATIONS, AND METHOD

Michael Joseph Haun, 5819 La Cuesta Dr., Santa Rosa, Calif. 95409

Provisional application No. 60/118,313, filed on Feb. 2, 1999. This application Jan. 31, 2000, Appl. No. 494,968.

Int. Cl. C03C *10/00;* **C03B** *19/06*

U.S. Cl. 501—155 **21 Claims**

1. A method for making a ceramic product from waste glass, comprising:

reducing the waste glass into a glass powder;

mixing the glass powder with a nonaqueous organic binder into a glass-binder mixture;

granulating the glass-binder mixture into granulated particles;

forming the granulated particles into a green ceramic article;

heating the green ceramic article to bum out the organic binder; and

firing the green ceramic article to sinter the green ceramic article into the ceramic product.

US 6,340,651 B1

MULTICYCLIC METALLOCYCLE METALLOCENES AND THEIR USE

Erik Licht; Helmut G. Alt, both of Bayreuth, Germany, and M. Bruce Welch, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 26, 1999, Appl. No. 299,461

Int. Cl. B01J *31/00;37/00;* **C08F** *4/02;4/60;4/44*

U.S. Cl. 502—103 **10 Claims**

1. A catalyst system useful for the polymerization of olefins comprising the product resulting from the combination of a cocatalyst and a metallocene produced by reacting a reactant metallocene having an alkenyl group attached to a cyclodienyl group of the metallocene with about 2 molar equivalents of an alkali metal alkyl having at least 4 carbon atoms, said alkenyl group having at least 3 carbon atoms and being attached only to that cyclodienyl group, before reaction with the alkali metal alkyl.

US 6,340,652 B1

CATALYSTS FOR POLYMERIZATION OF α-OLEFINS, PROCESS FOR PRODUCING α-OLEFIN POLYMERS, NOVEL TRANSITION METAL COMPOUNDS AND CATALYST COMPONENTS FOR POLYMERIZATION OF α-OLEFIN

Toshihiko Sugano; Naoshi Iwama; Eiji Isobe; Toru Suzuki; Yasuo Maruyama; Satoshi Hayakawa; Hisashi Shoda; Masami Kashimoto; Taku Kato; Takayuki Aoshima; Sugio Nishimura, all of Yokohama; Yoshinori Suga, Yokkaichi, and Stefan Sieber, Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Dec. 9, 1997, Appl. No. 987,768

Claims priority, application Japan, Dec. 9, 1996, 8-328352; Apr. 10, 1997, 9-108210; Jul. 24, 1997, 9-214186

Int. Cl. B01J *31/00;37/00;* **C08F** *4/02;4/60*

U.S. Cl. 502—118 **6 Claims**

1. A catalyst for polymerization of α-olefin, which comprises:

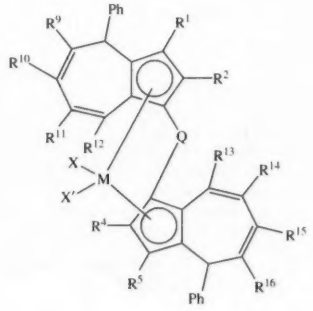
an essential component (A) of a transition metal compound,

an essential component (B) of an ion exchangeable layer compound except for silicate, or an inorganic silicate, and

an optional component (C) of an organoaluminum compound,

said component (A) being represented by the general formula (III):

(III)



wherein R^1, R^2, R^4 and R^5 are independently a hydrogen atom, a hydrocarbon group having 1 to 10 carbon atoms, a silicon-containing hydrocarbon group having 1 to 18 carbon atoms or halogenated hydrocarbon group having 1 to 18 carbon atoms; R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15} and R^{16} are independently a hydrogen atom, hydrocarbon group having 1 to 20 carbon atoms or a halogenated hydrocarbon group having 1 to 20 carbon atoms; Q is a bridging group between the two 5-membered rings, and is a divalent hydrocarbon group having 1 to 20 carbon atoms, a divalent halogenated hydrocarbon group having 1 to 20 carbon atoms, a silylene or an oligosilylene group which may have a hydrocarbon group or halogenated hydrocarbon group having 1 to 20 carbon atoms or a germylene group which may have a hydrocarbon group or halogenated hydrocarbon group having 1 to 20 carbon atoms; X and X' are independently a hydrogen atom, a halogen atom, a hydrocarbon group having 1 to 20 carbon atoms, a silicon-containing hydrocarbon group having 1 to 20 carbon atoms, a halogenated hydrocarbon group having 1 to 20 carbon atoms, an oxygen-containing hydrocarbon group having 1 to 20 carbon atoms, an amino group or a nitrogen-containing hydrocarbon group having 1 to 20 carbon atoms; Ph is a phenyl

group; and M is a transition metal selected from the group consisting of elements belonging to Groups 4–6 of the Periodic Table.

US 6,340,653 B1

MICROENCAPSULATED ACETOCHLOR HERBICIDAL COMPOSITION

Herbert B. Scher, Moraga, and Marius Rodson, El Sobrante, both of Calif., assignors to Syngenta Limited, Surrey, United Kingdom

Continuation of application No. 08/065,282, filed on May 20, 1993, now abandoned, which is a continuation of application No. 07/651,900, filed on Feb. 6, 1991, now abandoned. This application May 30, 1995, Appl. No. 453,611.

Int. Cl. A01N *25/28;37/22*

U.S. Cl. 504—112 **31 Claims**

1. Capsules capable of controlled release of encapsulated organic material comprising 2-chloro-N-(ethoxymethyl)-6'-ethyl-o-acetololuidide herbicide enclosed in a polyurea capsule produced by the process comprising encapsulating water-immiscible material within discrete capsules of polyurea without addition of a second reactant, whereby hydrolysis of an isocyanate monomer to form an amine takes place which in turn reacts with another isocyanate monomer to form polyurea, which comprises the steps of: a) providing, at room temperature, a dispersion of (i) a water-immiscible phase comprising the herbicide and an organic polyisocyanate in (ii) an aqueous phase comprising a solution of water, a surfactant and a protective colloid; and b) heating and maintaining said dispersion in a temperature range from about 40° C. to about 90° C., whereupon said herbicide is encapsulated within discrete polyurea capsular enclosures.

US 6,340,654 B1

FRESHNESS-RETAINING AGENT AND METHOD FOR AGRICULTURAL/HORTICULTURAL PRODUCTS

Yoshihiko Iijima, Tokyo, Japan, assignor to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 8, 2000, Appl. No. 657,904

Claims priority, application Japan, Sep. 10, 1999, 11-257261; Sep. 10, 1999, 11-257262

Int. Cl. A01N *3/02;* **A23B** *7/144;7/153*

U.S. Cl. 504—114 **12 Claims**

1. A freshness-retaining agent for an agricultural or horticultural product, comprising an organic acid and a hydrogencarbonate, wherein the organic acid is selected from the group consisting of cinnamic acid, derivatives of cinnamic acid, benzoic acid, vanillic acid, syringic acid, salicylic acid, sorbic acid, glutamic acid, nicotinic acid, undecylenic acid, itaconic acid, and polymers having acidic groups.

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HERBICIDAL EMULSIFIABLE CONCENTRATE COMPOSITIONS OF DINITROANILINE AND OXYACETAMIDE HERBICIDES

Ivor Philip Baker, Southampton, United Kingdom, assignor to American Cyanamid Co., Madison, N.J.

Provisional application No. 60/140,229, filed on Jun. 22, 1999, now abandoned. This application Jun. 15, 2000, Appl. No. 595,246.

Int. Cl. A01N *25/22;33/18;43/824*

U.S. Cl. 504—139 **19 Claims**

1. A herbicidal emulsifiable concentrate composition which comprises, on a weight to weight basis, about 15% to 40% of a dinitroaniline herbicide, about 1% to 10% of an oxyacetamide herbicide, about 0.01% to 1% phosphoric acid, up to about 30% of an emulsifier or mixture of emulsifiers, up to about 1% of an antifoaming agent, and an organic solvent or mixture of organic solvents.

US 6,340,656 B1

LIGHT, EXTRUDED COMPOSITIONS CONTAINING A LIGHT, EXTRUDABLE, CERAMIC CARRIER, METHODS FOR THEIR USE, AND PROCESSES FOR THEIR PREPARATION

Norikazu Takayanagi, Aichi; Masaomi Kimpara, Shizuoka, and Munehiro Suzuki, Aichi, all of Japan, assignors to American Cyanamid Co., Madison, N.J.

Provisional application No. 60/119,650, filed on Feb. 11, 1999. This application Feb. 9, 2000, Appl. No. 501,554.

Int. Cl. A01N *25/08*

U.S. Cl. 504—367 **33 Claims**

1. A light, extruded composition which comprises at least one agricultural compound; a light, extrudable, ceramic carrier; and at least one surface active agent.

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METHOD FOR PRODUCING THIN FILMS OF RIBBON-LIKE OXIDE HIGH-TEMPERATURE SUPERCONDUCTOR

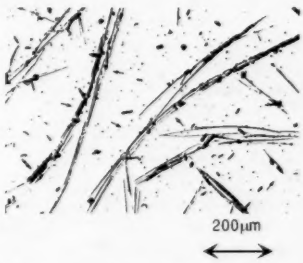
Shunichi Arisawa; Kazumasa Togano; Takeshi Hatano, and Hanping Miao, all of Ibaraki, Japan, assignors to Japan as represented by Director General of National Research Institute for Metals, Ibaraki, Japan

Filed Feb. 25, 2000, Appl. No. 513,194

Claims priority, application Japan, Feb. 25, 1999, 11-049114

Int. Cl. H01L *39/24;* **B05D** *5/12*

U.S. Cl. 505—452 **8 Claims**



1. A method for producing a thin film of ribbon-like oxide high-temperature superconductor, which comprises placing a solid starting material for the oxide high-temperature superconductor on a substrate and heating it at a temperature in the range from 60 degrees below or above the melting point of the solid starting material under ambient pressure in an oxygen atmosphere containing gaseous O_2 at a partial pressure of 80% or higher.

US 6,340,658 B1

VEGETABLE-BASED TRANSFORMER OIL AND TRANSMISSION LINE FLUID

Glenn S. Cannon, Waverly, Iowa, and John A. Kotowski, Piedmont, Calif., assignors to Wavely Light and Power, Waverly, Iowa

Continuation-in-part of application No. 09/335,990, filed on Jun. 18, 1999, now Pat. No. 6,159,913, which is a continuation of application No. 09/075,963, filed on May 11, 1998, now Pat. No. 5,958,851. This application Nov. 2, 2000, Appl. No. 705,015.

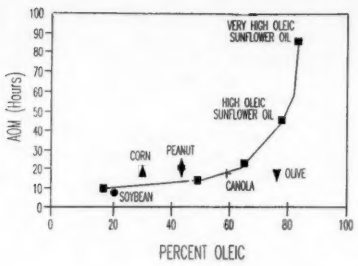
Int. Cl. C10M *105/32;* **H01B** *3/20*

U.S. Cl. 508—491 **57 Claims**

1. An insulating fluid for electrical components comprising:

an amount of oil comprising

a base oil selected from the group consisting of at least partially hydrogenated vegetable oil, vegetable oil higher in oleic acid content relative to a corresponding vegetable oil made from commodity grain, and combinations thereof, the



vegetable oil selected from the group consisting of soybean oil, corn oil, and combinations thereof, wherein the vegetable oil is corn oil made from corn which is higher in oleic acid content compared to commodity corn and wherein the corn is genetically-modified or bred;

and an antioxidant.

US 6,340,659 B1

METAL SALTS OF LACTONES AS LUBRICANT ADDITIVES

Jody A. Kocsis, Chagrin Falls; Sheri L. Blystone; Ewa A. Bardasz, both of Mentor, and Marvin B. DeTar, Wickliffe, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Dec. 13, 1995, Appl. No. 572,281

Int. Cl. C10M *129/54*

U.S. Cl. 508—518 **2 Claims**

1. A process for lubricating an internal combustion engine which contains at least one ceramic part which requires lubrication, which operates at a temperature of at least 250° C. at the top ring reversal position, or which is powered by natural gas, comprising supplying to such an engine a lubricant composition comprising:

(a) a major amount of an oil of lubricating viscosity, and

(b) a minor amount of a salt of an alkylene-linked polyaromatic molecule, the aromatic moieties of which comprise at least one hydrocarbyl-substituted phenol and at least one carboxy phenol, said salt being soluble in the oil of lubricating viscosity at the operating temperature of the engine.

US 6,340,660 B1

UREA HYDROCHLORIDE STABILIZED SOLVENT FOR CLEANING STAINLESS STEEL AND ALUMINUM

Charles Gastgaber, 26 Sunnyside Pl., Woodbridge, N.J. 07095

Filed Mar. 22, 2001, Appl. No. 814,111

Int. Cl. C11D *1/94;3/20;3/30*

U.S. Cl. 510—255 **15 Claims**

1. A cleaning composition for bare metal surfaces comprised of: from 15% to 70% by volume urea hydrochloride, from 3% to 15% by volume of surfactant, from 0.2% to 2% by volume of butyne based corrosion inhibitor, from 1% to 5% by volume of monoethanolamine, the balance being water.

US 6,340,661 B1

BLEACHING AND DYE TRANSFER INHIBITING COMPOSITION AND METHOD FOR LAUNDRY FABRICS

Maria Petra van Deurzen; Ronald Hage, and Simon Marinus Veerman, all of Vlaardingen, Netherlands, assignors to Unilever Home & Personal Care USA, division of Conopco, Inc., Greenwich, Conn.

Filed Feb. 28, 2001, Appl. No. 796,140

Claims priority, application United Kingdom, Mar. 1, 2000, 0005090

Int. Cl. C11D *3/395*

U.S. Cl. 510—302 **15 Claims**

1. A atomospheric oxygen stain bleaching composition for laundry fabrics, comprising:

a bleach catalyst comprising a ligand which forms a complex with a transition metal, the complex catalysing bleaching of stains in the absence of peroxygen bleach or a peroxy-based or -generating bleach system; and

a dye transfer inhibition agent, and wherein the composition is wholly devoid of peroxygen bleach or a peroxy-based or -generating bleach system in a bleaching effective amount.

US 6,340,662 B1

AQUEOUS FOAM REGULATOR EMULSION

Juergen Millhoff; Thomas Gassenmeier, both of Duesseldorf; Maria Liphard, Essen; Rene-Andres Artiga González, Duesseldorf; Stefan Hammerstein, Duesseldorf, and Ingrid Kraus, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft Auf Aktien (KGaA), Duesseldorf, Germany

Filed Dec. 10, 1999, Appl. No. 458,650

Claims priority, application Germany, Dec. 11, 1998, 198 57 204

Int. Cl. C11D *1/83;3/30;3/32;3/43*

U.S. Cl. 510—417 **21 Claims**

1. An aqueous foam regulator emulsion comprising:

a) 16 to 70 percent by weight of an active foam regulator comprising a mixture of a paraffin wax and a silicone oil in a weight ratio of 1:2 to 100:1;

b) 2 to 15 percent by weight of an nonionic and/or anionic emulsifier;

c) less than 80 percent by weight of water; and

d) 1 to 10 percent by weight of bis-fatty acid amide derived from C_{2-7} diamines and C_{12-22} fatty acids.

US 6,340,663 B1

CLEANING WIPES

Malcolm A. Deleo, Castro Valley; Robert L. Blum, Clayton; Maria G. Ochomogo, Danville; Paul A. Pappalardo, and Elizabeth N. Swayne, both of Livermore, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Nov. 24, 1999, Appl. No. 448,703

Int. Cl. C11D *17/04;3/22;3/37;* **B08B** *7/00*

U.S. Cl. 510—438 **11 Claims**

1. A hard surface cleaning wipe which cleans surfaces without streaking and filming, said cleaning wipe comprising:

(a) a moist wipe which comprises at least one layer of absorbent or adsorbent material, said wipe impregnated with:

(b) a liquid cleaner which consists essentially of:

(i) a low residue surfactant;

(ii) a hydrophilic polymer selected from the group consisting of polysaccharides, polycarboxylates, polyvinyl alcohols, polyvinylpyrrolidones, polyethylene glycols, methylvinyl ethers, and mixtures thereof;

(iii) optionally, at least one adjunct selected from the group consisting of solvents, additional surfactants, cosurfactants, chelating agents, buffers, thickeners, dyes, colorants, biocides, fragrances, defoamers and mixtures thereof; and

(iv) the remainder, water.

US 6,340,664 B1

LAUNDRY DETERGENT OR CLEANING PRODUCT TABLETS WITH PARTIAL COATING

Thomas Gassenmeier, Duesseldorf; Fred Schambil, Monheim, and Juergen Millhoff, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (KGaA), Duesseldorf, Germany

Filed Aug. 25, 2000, Appl. No. 648,163

Claims priority, application Germany, Aug. 26, 1999, 199 40 547

Int. Cl. C11D *17/00;3/37*

U.S. Cl. 510—441 **20 Claims**

1. A compacted laundry detergent or cleaning product tablet having a surface and comprising:

i) at least one builder; and

ii) at least one surfactant, the tablet having a coating and the surface having one or more mechanically sensitive parts, wherein the coating covers only the one or more mechanically sensitive parts and no surface between those portions of two or more mechanically sensitive parts that are more than 10 mm apart.

US 6,340,665 B1

METHOD FOR PRODUCING NEUTRAL SUGAR SURFACTANT GRANULATES

Thomas Lueder, Langenfeld; Konstantinos Scholinakis, Monheim; Bernhard Gutsche, Hilden; Hermann Hensen, Haan, and Werner Seipel, Hilden, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP98/01178, § 371 Date Dec. 14, 1999, § 102(e) Date Dec. 14, 1999, PCT Pub. No. WO98/40460, PCT Pub. Date Sep. 17, 1998

PCT Filed Mar. 3, 1998, Appl. No. 380,916

Claims priority, application Germany, Mar. 12, 1997, 197 10 153

Int. Cl. C11D *1/00;* **C08B** *37/00*

U.S. Cl. 510—470 **11 Claims**

1. A process for making neutral sugar surfactant granules comprising:

(a) providing a water-containing alkaline sugar surfactant selected from the group consisting of an alkyl oligoglycoside, an alkenyl oligoglycoside, a fatty acid-N-alkyl polyhydroxyalkylamide, and mixtures thereof;

(b) providing a thin-layer evaporator or dryer having rotating internals;

(c) neutralizing the water-containing alkaline sugar surfactant to a pH of from 6.8 to 7.5 to form a neutralized water-containing sugar surfactant;;

(d) introducing the neutralized water-containing alkaline sugar surfactant into the thin-layer evaporator or dryer; and

(e) drying the water-containing alkaline sugar surfactant in the thin-layer evaporator or dryer until it has a residual water content below 2% by weight.

US 6,340,666 B1

ALLYL ETHER

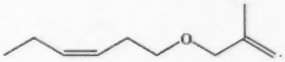
Anubhav P. S. Narula, Hazlet; Edward Arruda, Cliffwood; James Joseph Koestler, Hazlet, and Ellen Ann Molner, Kinnelon, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 6, 2000, Appl. No. 655,754

Int. Cl. A61K *7/46;* **C07C** *43/16*

U.S. Cl. 512—25 **7 Claims**

1. A compound having the formula



4. A method for perfuming a product by incorporating an olfactory acceptable amount of the compound of claim **1**.

US 6,340,667 B1

REPTILIAN-DERIVED PEPTIDES FOR THE TREATMENT OF MICROBIAL INFECTIONS

Brian F. Hoffman, Key Biscayne, Fla., and Ofer Binah, Kiryat Tivan, Israel, assignors to Theragem, Inc., Old Tappan, N.J.

Continuation of application No. PCT/US98/16659, filed on Aug. 10, 1998, Provisional application No. 60/061,341, filed on Oct. 8, 1997. This application Jul. 14, 1999, Appl. No. 353,719.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *31/74;35/14;38/00*

U.S. Cl. 514—2 **25 Claims**

1. A method for killing bacteria or fungi, wherein said bacteria or fungi are selected from the group consisting of gram-negative bacteria or yeast, comprising contacting the bacteria or fungi with a bacterial of fungal cell killing effective amount of a fragment of reptilian hemoglobin protein, selected from the group consisting of a reptilian heme-free hemoglobin α chain, a reptilian heme-free hemoglobin β chain; said reptilian hemoglobin protein fragment retaining bacterial or fungal killing function, wherein said contacting is for a time and under conditions effective to kill bacteria or fungi.

US 6,340,668 B1

NEURONAL USES OF BMP-11

Anthony J. Celeste; John M. Wozney, both of Hudson, and R. Scott Thies, Andover, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation of application No. 08/966,297, filed on Nov. 7, 1997, now abandoned, which is a continuation of application No. 08/919,850, filed on Aug. 12, 1997, which is a continuation-in-part of application No. 08/452,772, filed on May 30, 1995, now Pat. No. 5,700,911, which is a division of application No. 08/247,907, filed on May 20, 1994, now Pat. No. 5,639,638, which is a continuation-in-part of application No. 08/061,464, filed on May 12, 1993, now abandoned. This application Oct. 7, 1999, Appl. No. 414,234.

Int. Cl. A61K *38/18;* **C07K** *14/51*

U.S. Cl. 514—12 **2 Claims**

1. A method for promoting the survival of neuronal cells in a mammal comprising administering to said cells an amount of a bone morphogenetic protein-11 (BMP-11) effective to promote the survival of said cells, wherein said BMP-11 comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 2 and SEQ ID NO: 11.

US 6,340,669 B1

LIPOPROTEIN COMPLEXES AND COMPOSITIONS CONTAINING THEM

Benvenuto Cestaro, and Elvira Pistolesi, both of Milan, Italy, assignors to Hunza di Maria Carmela Marazzita S.A.S., Milan, Italy

PCT No. PCT/EP00/00452, § 371 Date Sep. 20, 2000, § 102(e) Date Sep. 20, 2000, PCT Pub. No. WO00/43036, PCT Pub. Date Jul. 27, 2000

PCT Filed Jan. 21, 2000, Appl. No. 646,620

Claims priority, application Italy, Jan. 22, 1999, MI99A0114; Nov. 26, 1999, MI99A2471

Int. Cl. A61K *38/00;* **C07K** *1/00;5/00;7/00*

U.S. Cl. 514—21 **30 Claims**

1. A lipoprotein complex comprising

a lipase-inhibiting protein or peptide component, and/or

an amylase-inhibiting protein or peptide component, and

a phospholipid component.

US 6,340,670 B1

ACETAL BENZYLMALTOSIDES AS INHIBITORS OF SMOOTH MUSCLE CELL PROLIFERATION

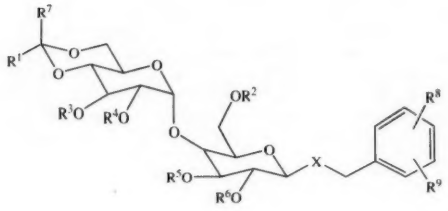
Scott C. Mayer, Robbinsville, N.J.; Paul J. Dollings, Newtown, Pa., and Robert E. McDevitt, Somerset, N.J., assignors to American Home Products Corporation, Madison, N.J.

Provisional application No. 60/126,443, filed on Nov. 24, 1998. This application Nov. 22, 1999, Appl. No. 447,009.

Int. Cl. A61K *31/702;* **C07H** *15/203*

U.S. Cl. 514—25 **24 Claims**

1. A compound of formula I having the structure



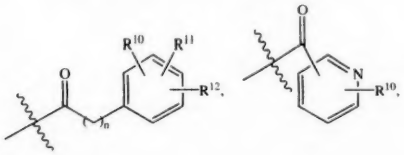
I

wherein

X is O or S;

R^1 alkyl of 1–6 carbons atoms, haloalkyl of 1–6 carbon atoms, nitroalkyl of 1–6 carbon atoms, cyanoalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, phenyl mono-, di-, or tri-substituted with R^8, phenylalkyl of 7–10 carbon atoms, wherein the phenyl ring mono-, di-, or tri-substituted with R^8, pyridyl substituted with R^8, furyl substituted with R^8, thienyl substituted with R^8, and thiazolyl substituted with R^8;

R^2 is hydrogen, acyl of 2–6 carbon atoms, haloacyl of 2–6 carbon atoms, nitroacyl of 2–7 carbon atoms, cyanoacyl of 2–7 carbon atoms, or trifluoromethylacyl of 3–8 carbon atoms, carboalkoxyacyl of 4–12 carbon atoms,



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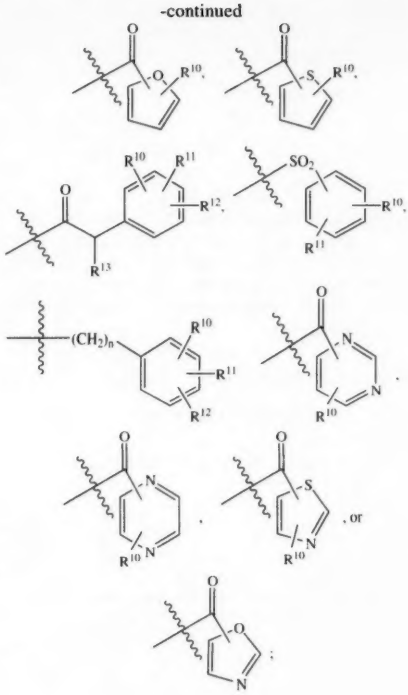
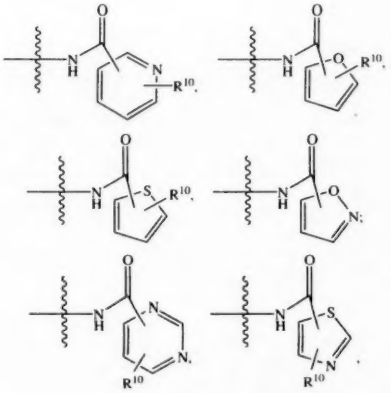


R^3, R^4, R^5, R^6 are each, independently, hydrogen, acyl of 2–7 carbon atoms, benzoyl, wherein the phenyl moiety is mono-, di-, or tri-substituted with R^8, haloacyl of 2–7 carbon atoms, nitroacyl of 2–7 carbon atoms, cyanoacyl of 2–7 carbon atoms, or trifluoromethylacyl of 3–8 carbon atoms;

R^7 is hydrogen;

R^8 is hydrogen, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, phenyl, —CN, —NO_2, halogen, or —CF_3;

R^9 is hydrogen, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, phenyl, —CN, —NO_2, halogen, —CF_3, —NHR^3, —NR^3R^3, —NR^3R^{14}, —$NHCO_2R^{14}$, —$NHSO_2R^{14}$,



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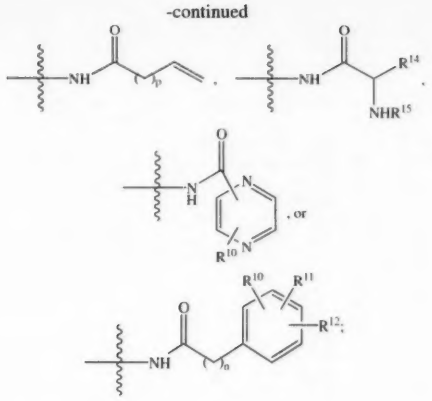

R^{10}, R^{11}, R^{12}, are each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, phenyl, —CN, —NO_2, halogen, —CF_3, acyl of 2–7 carbon atoms, or benzoyl, wherein the phenyl group or the phenyl moiety of the benzoyl group is optionally mono-, di-, or tri-substituted with alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, —CN, —NO_2, halogen, or —CF_3;

R^{13} is hydrogen, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, —CN, —NO_2, halogen, —CF_3, or phenyl group, wherein the phenyl moiety is optionally mono-, di-, tri-substituted with alkyl 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, or halogen;

R^{14} is alkyl of 1–6 carbon atoms;

R^{15} is hydrogen, acyl of 2–7 carbon atoms, benzoyl, or —CO_2R^{16};

R^{16} is alkyl of 1–6 carbon atoms, benzyl, phenyl, or fluorenyl;

n=0–3;

p=0–6;

or a pharmaceutically acceptable salt thereof.

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STABLE COMPOSITIONS FOR PARENTERAL ADMINISTRATION AND THEIR USE

Susan Mancini Cady, Yardley, Pa.; William David Steber, Ledgewood, N.J.; Phillip Wayne Hayes, Rushland, Pa.; Mary Ehlers Doscher, Trenton, N.J., and Kurt Allen Schwinghammer, Richboro, Pa., assignors to American Cyanamid Company, Madison, N.J.

Continuation-in-part of application No. 07/734,430, filed on Jul. 23, 1991, now abandoned. This application Jun. 22, 1994, Appl. No. 263,574.

Int. Cl. A61K *31/70;9/16*

U.S. Cl. 514—28 **19 Claims**

1. A microsphere composition comprising on a weight basis about 20% to 95% of a higher melting fat, a wax or a mixture thereof; about 1% to 50% of a compound dissolved into said higher melting fat, wax or mixture thereof, said compound selected from the group consisting of an LL-F28249α-λ, a 23-oxo or 23-imino derivative of an LL-F28249α-λ, a inilbemycin and an avermectin; 0 to about 30% of an oil, a semi-soft fat, a lower melting fatty acid, a lower melting fatty acid alcohol, a lower melting fatty acid ester, a lower melting fatty acid ether, a salt of a lower melting fatty acid or a mixture thereof; and about 0.001% to 10% of an antioxidant.

US 6,340,672 B1

PARASITICIDAL FORMULATION AND A METHOD OF MAKING THIS FORMULATION

Richard Mihalik, St. Joseph, Mo., assignor to Phoenix Scientific, Inc., St. Joseph, Mo.

Filed Feb. 16, 2000, Appl. No. 504,830

Int. Cl. A61K *31/70;31/44;31/425;31/415;31/355*

U.S. Cl. 514—30 **22 Claims**

1. A parasiticidal formulation, comprising the mixture of:

at least one pyrrolidone solvent;

at least one bridging solvent is selected from the group consisting of diethylene glycol monobutylether, benzyl benzoate, xylenes, and any combinations thereof; and

at least one parasiticidal agent.

US 6,340,673 B1

METHOD OF TREATING TUMORIGENIC DISEASE

Bernard Roizman, and Joany Chou, both of Chicago, Ill., assignors to Arch Development Corporation, Chicago, Ill.

Continuation of application No. 08/483,533, filed on Jun. 7, 1995, which is a division of application No. 08/419,853, filed on Apr. 11, 1995, now abandoned, which is a division of application No. 07/861,233, filed on Mar. 31, 1992, now abandoned. This application Apr. 1, 1999, Appl. No. 283,471. This patent is subject to a terminal disclaimer.

Int. Cl. A61K *48/00;* **C12N** *15/63;15/85*

U.S. Cl. 514—44 **6 Claims**

1. A method of treating tumorigenic disease in a mammal comprising the step of administering at or near a site of a tumor of said tumorigenic disease a herpes simplex virus vector lacking an expressible γ_1 34.5 gene, whereby the growth of said tumor is suppressed.

US 6,340,674 B1

METHOD OF INHIBITING THE PROLIFERATION AND CAUSING THE DIFFERENTIATION OF CELLS WITH IGF-1 RECEPTOR ANTISENSE OLIGONUCLEOTIDES

Renato Baserga, Ardmore; Christian Sell, Philadelphia, and Raphael Rubin, Penn Valley, all of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Continuation of application No. 08/880,313, filed on Jun. 20, 1997, which is a continuation of application No. 08/479,173, filed on Jun. 6, 1995, now Pat. No. 5,643,788, which is a continuation of application No. 08/158,176, filed on Nov. 23, 1993, now Pat. No. 5,456,612, which is a continuation-in-part of application No. 08/037,257, filed on Mar. 26, 1993, now abandoned. This application Sep. 22, 2000, Appl. No. 668,822.

Int. Cl. A61K *48/00;* **C07H** *21/04;* **C12N** *15/09*

U.S. Cl. 514—44 **26 Claims**

1. A method of inhibiting proliferation of cancer cells in vivo comprising contacting said cancer cells in vivo with an effective amount of an oligonucleotide substantially complementary to a region of IGF-1 receptor RNA and which specifically hybridizes to IGF-1 receptor RNA.

US 6,340,675 B1

PROCESS FOR THE PRODUCTION OF AN ANTICOAGULANT COMPOSITION

Edward Mancilla, Waunakee, Wis., and Elizabeth M. Lagwinska, Chesterfield, Mo., assignors to Sherwood Services AG, Schaffhausen, Switzerland

Continuation of application No. 08/235,622, filed on Jun. 29, 1994, now abandoned, which is a division of application No. 08/096,123, filed on Jul. 22, 1993, now Pat. No. 5,336,620, which is a continuation of application No. 08/009,627, filed on Jan. 27, 1993, now abandoned. This application Sep. 11, 1996, Appl. No. 712,249.

Int. Cl. A61K *31/715;* C08B *37/10*

U.S. Cl. 514—56 23 Claims

1. An anticoagulant composition which does not adversely affect the measurement of calcium ion concentration within a blood sample produced by a process comprising

(a) contacting an aqueous solution of sodium heparin with an acidic ion exchange resin for a period of time sufficient such that the aqueous effluent produce possesses a pH of about 3 or less;

(b) reacting said effluent with a heavy metal-containing compound suitable to produce a heavy metal heparin salt;

(c) reacting said heavy metal heparin salt produced in Step (b) with an aqueous solution of lithium salts in sufficient amounts such that the resulting solution exhibits a pH of about 6 to about 7.

US 6,340,676 B2

4-ARYL-1-OXA-9-THIA-CYCLOPENTA (B) FLUORENES

Jay E. Wrobel, Lawrenceville, and Zenan Li, Plainsboro, both of N.J., assignors to American Home Products Corporation, Madison, N.J.

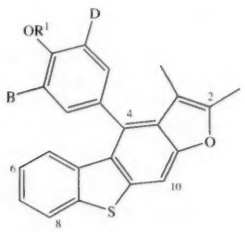
Division of application No. 09/526,387, filed on Mar. 16, 2000, which is a division of application No. 09/307,820, filed on May 10, 1999, now Pat. No. 6,057,316, Provisional application No. 60/135,096, filed on May 12, 1998. This application Apr. 20, 2001, Appl. No. 839,788.

Int. Cl. A61K *31/4427;* C07D *401/10;411/100*

U.S. Cl. 514—89 8 Claims

1. A compound of formula I having the structure

(I)



wherein

B and D are each, independently, hydrogen, halogen, —CN, alkyl of 1–6 carbon atoms, aryl, or aralkyl of 6–12 carbon atoms;

R^1 is $—CH(R^2)W$;

R^2 is $—CH_2$(3-pyridyl);

W is $—CO_2R^3$, $—CONH_2$, —CONHOH, —CN, $CONH(CH_2)_2CN$, 5-tetrazole, or $—PO_3(R^3)_2$;

R^3 is hydrogen, alkyl of 1–6 carbon atoms, or aryl;

R^4 is hydrogen or alkyl of 1–6 carbon atoms;

or a pharmaceutically acceptable salt thereof.

US 6,340,677 B1

METHOD OF EVALUATION OF SKIN CONDITIONING-AMELIORATING AGENTS AND METHOD OF PRODUCING COMPOSITIONS FOR TOPICAL APPLICATION TO SKIN

Yasutomo Nishimori; Katsuo Matsumoto, and Yukiko Kenjo, all of Yokohama, Japan, assignors to Pola Chemical Industries, Inc., Shizuoka, Japan

PCT No. PCT/JP98/00896, § 371 Date Sep. 13, 1999, § 102(e) Date Sep. 13, 1999, PCT Pub. No. WO98/40045, PCT Pub. Date Sep. 17, 1998

PCT Filed Mar. 4, 1998, Appl. No. 381,149

Claims priority, application Japan, Mar. 11, 1997, 9-074353

Int. Cl. A61K *31/56*

U.S. Cl. 514—169 12 Claims

1. A method for evaluating a preparation for skin condition amelioration using an animal having at least one skin site in compromised condition having a degree of order of dermis collagen fiber bundles, which comprises the steps of:

applying the preparation to the skin site, and

evaluating under a microscope a change in the degree of order of dermis collagen fiber bundles at the skin site before and after applying the preparation to the skin site.

US 6,340,678 B1

4,4-DIFLUORO-2,3,4,5-TETRAHYDRO-1H-1-BENZOAZEPINE DERIVATIVES AND DRUG COMPOSITIONS CONTAINING THEM

Akira Matsuhisa, Ushiku; Takeshi Murakami, Tsukuba; Shuichi Sakuda, Tokyo; Noriyuki Kawano; Kumiko Shibasaki, both of Tsukuba, and Akihiro Tanaka, Tsuchiura, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP98/00916, § 371 Date Sep. 2, 1999, § 102(e) Date Sep. 2, 1999, PCT Pub. No. WO98/39325, PCT Pub. Date Sep. 11, 1998

PCT Filed Mar. 5, 1998, Appl. No. 380,683

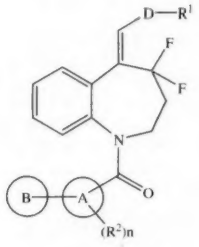
Claims priority, application Japan, Mar. 6, 1997, 9-052163

Int. Cl. A61K *31/55;* A61P *15/00;* C07D *223/16*

U.S. Cl. 514—213.01 6 Claims

1. 4,4-Difluoro-2,3,4,5-tetrahydro-1H-1-benzoazepine compounds represented by the following formula (I) or salts thereof:

(I)



(wherein each of the symbols has the following meaning:

ring A: a 5-membered heteroarylene group;

ring B: an optionally substituted aryl group or a 5- to 6-membered heteroaryl group;

D: a carbonyl group or a lower alkylene group;

R^1: a group represented by formula, NR^3R^4, an —O-lower alkyl group, or OH;

R^2: an optionally halogen atom-substituted lower alkyl group, an —O-lower alkyl group, an —S-lower alkyl group, or a —CO-lower alkyl group;

R^3, R^4: same or different and each is

1) a hydrogen atom,

2) a lower alkyl group (the lower alkyl group may be substituted with OH, an optionally protected amino group, an

optionally protected mono-lower alkylamino group, a di-lower alkylamino group, an optionally lower alkyl group-substituted 5- to 7-membered saturated heterocyclic group, a 5- to 6 -membered heteroaryl group, or an aryl group),

3) a cycloalkyl group,

4) an optionally lower alkyl group-substituted 5- to 7-membered saturated heterocyclic group,

5) a 5- to 6-membered heteroaryl group,

6) an aryl group, or

7) an optionally substituted 5- to 7-membered nitrogen-containing heterocyclic group formed by integration of the formula, NR^3R^4 (the 5- to 7-membered nitrogen-containing heterocyclic group may be fused with a benzene ring or with a 5- to 6-membered heteroaryl group);

(in the 5- to 7-membered saturated heterocyclic group, the 5- to 7-membered nitrogen-containing heterocyclic group and the 5- to 6-membered heteroaryl group in the above 2), 4), 5) and 7), a group having a cyclic secondary amine may be one wherein the amine is protected); and

n: 0, 1 or 2.

US 6,340,679 B1

GUANIDINE DERIVATIVES AS INHIBITORS OF CELL ADHESION

Anuschirwan Peyman, Kelkheim, Germany; Jochen Knolle, San Francisco, Calif.; Karl-Heinz Scheunemann, Liederbach, Germany; David William Will, Kriftel, Germany; Denis Carniato, Marcoussis; Jean-Francois Gourvest, Claye Souilly, both of France; Thomas R. Gadek, Oakland, and Sarah Catherine Bodary, San Bruno, both of Calif., assignors to Aventis Pharma Deutschland GmbH, Frankfurt, Germany, and Genentech, Inc., South San Francisco, Calif.

Filed Feb. 11, 2000, Appl. No. 502,577

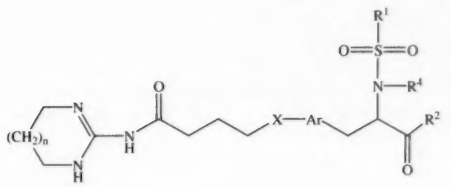
Claims priority, application European Pat. Off., Feb. 13, 1999, 99102916

Int. Cl. C07D *239/16;409/12;* **A61K** *31/505*

U.S. Cl. 514—218 **10 Claims**

1. A compound of the formula I

I



in which

R^1 is $(C_1–C_{20})$-alkyl, $(C_3–C_{16})$-cycloalkyl, $(C_3–C_{16})$-cycloalkyl-$(C_1–C_6)$-alkyl-, $(C_6–C_{14})$-aryl, $(C_6–C_{14})$-aryl-$(C_1–C_6)$-alkyl-, $(C_5–C_{14})$-heteroaryl or $(C_5–C_{14})$-heteroaryl-$(C_1–C_6)$-alkyl-, where the alkyl residue, the cycloalkyl residue, the aryl residue and the heteroaryl residue each is unsubstituted or is substituted by one, two or three identical or different residues R^3, and where in the alkyl residue and the cycloalkyl residue one, two or three CH_2 groups can be replaced by identical or different groups selected from the series consisting of O, S and NR^4;

R^2 is hydroxy, amino, $(C_1–C_6)$-alkoxy, $(C_1–C_6)$-alkyl-CO—O—$(C_1–C_4)$-alkoxy-, $(C_3–C_{16})$-cycloalkyloxy, $(C_3–C_{16})$-cycloalkyl-CO—O—$(C_1–C_4)$-alkoxy- or $(C_6–C_{14})$-aryl-CO—O—$(C_1–C_4)$-alkoxy-, where the alkoxy residue, the alkyl residue, the aryl residue and the cycloalkyl residue each is unsubstituted or is substituted by one, two or three identical or different residues from the group consisting of hydroxy, halogen, oxo, CN, $(C_1–C_4)$-alkyl-CO—, $(C_1–C_4)$-alkyl-CO—NH—, H_2N—CO—, $(C_1–C_4)$-alkyl-NH—CO—, COOH, —CO—O—$(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkoxy, $(C_1–C_4)$-alkyl-$S(O)_2$—, $—NR^7R^{7'}$ and $—N^+R^7R^{7'}R^{7''}$ Q^-, where R^7, $R^{7'}$ and $R^{7''}$ independently of one another are hydrogen, $(C_1–C_6)$-alkyl, $(C_5–C_{14})$-aryl or $(C_5–C_{14})$-aryl-$(C_1–C_6)$-alkyl- and Q^- is a physiologically tolerable anion, or R^2 is an amino acid residue which is bonded to the CO group carrying the group R^2 through an amino group;

R^3 is $(C_1–C_8)$-alkyl, $(C_3–C_{12})$-cycloalkyl, $(C_1–C_8)$-alkoxy, $(C_6–C_{14})$-aryl, $(C_6–C_{14})$-aryl-$(C_1–C_4)$-alkyl-, halogen, trifluoromethyl, cyano, hydroxy, oxo, nitro, amino, $(C_1–C_4)$-alkyl-$S(O)_2$—, —NH—$(C_1–C_4)$-alkyl, $—N((C_1–C_4)\text{-alkyl})_2$, —NH— CO—$(C_1–C_4)$-alkyl, —CO— $(C_1–C_4)$-alkyl, —CO—NH_2, —CO—NH—$(C_1–C_4)$-alkyl, —COOH or —CO— O—$(C_1–C_4)$-alkyl;

R^4 is hydrogen or $(C_1–C_8)$-alkyl;

Ar is a 6-membered monocyclic aromatic ring system containing 0, 1, 2, 3, or 4 ring nitrogen atoms which is unsubstituted or substituted with one or more identical or different residues R^3;

X is CH_2, O, NR^4 or S;

n is zero, one or two;

in all its stereoisomeric forms and mixtures thereof in all ratios, and its physiologically tolerable salts.

US 6,340,680 B1

OXAZINOQUINOLONES USEFUL FOR THE TREATMENT OF VIRAL INFECTIONS

Steven Ronald Turner, and Suvit Thaisrivongs, both of Kalamazoo, Mich., assignors to Pharmacia and Upjohn Company, Kalamazoo, Mich.

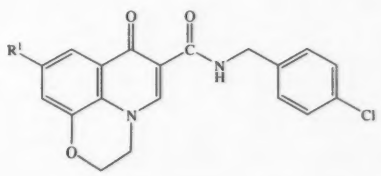
Provisional application No. 60/157,742, filed on Oct. 5, 1999. This application Sep. 28, 2000, Appl. No. 672,472.

Int. Cl. C07D *498/06;516/04;* **A61K** *35/535;35/54*

U.S. Cl. 514—230.2 **9 Claims**

1. A compound of formula I

I



wherein R^1 is C_{1-6} alkyl, optionally substituted with —OH, $—OC_{1-4}$ alkyl or het;

wherein C_{1-6} alkyl is optionally partially unsaturated;

wherein het is a radical of a five- or six-membered heterocyclic ring having one or two heteroatoms selected from the group consisting of oxygen, sulfur and N;

or a pharmaceutically acceptable salt, racemate, solvate, tautomer or optical isomer thereof.

US 6,340,681 B1
2-BENZIMIDAZOLYLAMINE COMPOUNDS AS ORL-1-RECEPTOR AGONISTS

Fumitaka Ito, Chita-gun, Japan, assignor to Pfizer Inc, New York, N.Y.

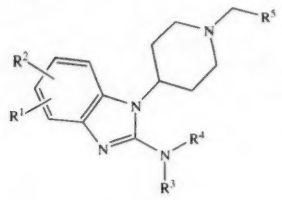
Continuation of application No. PCT/IB99/01290, filed on Jul. 16, 1999. This application Jun. 29, 2000, Appl. No. 606,921.

Int. Cl. C07D *401/04;405/14;40/14;* **A61K** *31/454;25/04*

U.S. Cl. 514—234.5 **10 Claims**

1. A compound of the following formula:

(I)



or a salt thereof, wherein

R^1 and R^2 are independently selected from hydrogen; halo; hydroxy; $(C_1–C_4)$alkyl; $(C_2–C_4)$alkenyl; $(C_2–C_4)$alkynyl; halo$(C_1–C_4)$alkyl; $(C_1–C_4)$alkoxy; $(C_1–C_4)$alkylsulfonyl; $(C_1–C_4)$alkyl-C(=O)—; carboxy; $(C_1–C_4)$alkyl-C(=O)O—; amino; NH_2—C(=O)—; $(C_1–C_4)$alkyl-C(=O)—NH—; $(C_1–C_4)$alkyl-SO_2—NH—; phenyl and naphthyl;

R^3 and R^4 are independently selected from halo$(C_1–C_{10})$alkyl; $(C_1–C_6)$alkyl substituted with one to two substituents independently selected from hydroxy, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkyl-S—, phenoxy, amino, oxo, mono[$(C_1–C_4)$alkyl]amino, di[$(C_1–C_4)$alkyl]amino, N-[$(C_7–C_9)$cycloalkyl-$(C_1–C_4)$alkyl]-N-$(C_1–C_4)$alkyl-amino, $(C_1–C_4)$alkoxy-C(=O)—, aryl selected from phenyl and naphthyl wherein the aryl is optionally substituted with one to three substituents independently selected from halo, hydroxy, $(C_1–C_4)$alkoxy, and trifluoro$(C_1–C_4)$alkoxy, and heterocyclyl selected from pyrrolidyl and piperidinyl wherein the heterocyclyl is optionally substituted with $(C_1–C_4)$alkyl;

$(C_3–C_8)$cycloalkyl optionally substituted with $(C_1–C_4)$alkyl;

$(C_3–C_8)$cycloalkenyl optionally substituted with $(C_1–C_4)$alkoxy-C(=O)—;

5- to 6-membered heterocyclyl, 5- to 6-membered heterocyclyl-(C=O)— and 5-to 6-membered heterocyclyl-$(C_1–C_4)$alkyl wherein each heterocyclyl contains in the ring one to three heteroatoms independently selected from oxygen, nitrogen and sulfur, is optionally fused to a phenyl ring, and is optionally substituted with one to two substituents independently selected from halo, $(C_1–C_4)$alkyl, benzyl and oxo;

phenyl optionally substituted with one to three substituents independently selected from halo, $(C_1–C_4)$alkyl, halo$(C_1–C_4)$alkyl and $(C_1–C_4)$alkoxy; and

5- to 6-membered heteroaryl-$(C_1–C_4)$alkyl wherein said heteroaryl contains one to four ring atoms independently selected from oxygen, nitrogen and sulfur and is optionally fused to a phenyl ring; or

R^3 and R^4, together with the nitrogen atom to which they are attached, form a fully saturated, partially saturated or fully unsaturated 5- to 8-membered nitrogen containing heterocyclic ring wherein said heterocyclic ring optionally contains in the ring one or two additional heteroatoms independently selected from nitrogen, oxygen and sulfur, optionally contains in the ring a group CR^6R^7 wherein R^6 and R^7 taken together form an oxo group or a cyclic acetal, and is optionally fused to a phenyl, naphthalene or $(C_5–C_8)$cycloalkyl ring, and optionally substituted with one to two substituents independently selected from halo; $(C_1–C_4)$alkyl; halo$(C_1–C_4)$alkyl; $(C_1–C_4)$alkoxy; hydroxy; carbonyl; benzhydryl; hydroxy-$(C_1–C_4)$alkyl; $(C_1–C_4)$alkoxy-$(C_1–C_4)$alkyl-; amino; amino-$(C_1–C_4)$alkyl-amino; mercapto; $(C_1–C_4)$alkoxy-C(=O)—; pyrrolidino-$(C_1–C_4)$alkyl, amino-C(=O)—; $(C_1–C_4)$alkyl-C(=O)—; $(C_1–C_4)$alkoxy-C(=O)—amino-; piperidinyl optionally substituted with one or two substituents independently selected from amino, mono[$(C_1–C_4)$alkyl]amino, di[$(C_1–C_4)$alkyl]amino-, benzylamino and di-(benzyl)amino; phenyl optionally substituted with one to three substituents selected from halo and $(C_1–C_4)$alkoxy; phenyl-$(C_1–C_4)$alkyl; phenyl-$(C_1–C_4)$alkenyl; phenyl-$(C_1–C_4)$alkoxy-C(=O)—; 1,3-benzodioxolyl-$(C_1–C_4)$alkyl-; trifluoromethyl; nitro; pyridyl optionally substituted with one to three substituents independently selected from halo and trifluoromethyl; quinolinyl optionally substituted with one to three substituents independently selected from halo and trifluoromethyl; pyrrolidinyl-$(C_1–C_4)$alkyl and pyrrolidinyl-$(CH_2)_m$—CR^8R^9—$(CH_2)_n$— wherein m and n are independently 1, 2, 3 or 4, and R^8 and R^9, taken together with the carbon atom to which they are attached, form $(C_3–C_6)$cycloalkyl; and

R^5 is phenyl or $(C_4–C_{11})$cycloalkyl optionally substituted with one to three substituents independently selected from the group consisting of hydrogen, halo, hydroxy, $(C_1–C_4)$alkyl, halo $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylsulfonyl, $(C_1–C_4)$alkyl-C(=O)—, carboxy, $(C_1–C_4)$alkyl-C(=O)O—, amino, NH_2-C(=O)—, $(C_1–C_4)$alkyl-C(=O)—NH—, $(C_1–C_4)$alkyl-SO_2—NH—, phenyl and naphthyl.

US 6,340,682 B1
DIAMIDE COMPOUND AND DRUGS CONTAINING THE SAME

Hiroyuki Ishiwata, Ichikawa; Mototsugu Kabeya, Higashimurayama; Hiromichi Shigyo, Fuchu; Masami Shiratsuchi, Musashimurayama; Yukio Hattori, Ushiku; Hiroshi Nakao, Tsuchiura; Takao Nagoya, Tsuchiura; Seiichi Sato, Tokyo; Soichi Oda, Higashimurayama; Makoto Suda, and Manabu Shibasaki, both of Tsukuba, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

PCT No. PCT/JP97/02882, § 371 Date Feb. 23, 1999, § 102(e) Date Feb. 23, 1999, PCT Pub. No. WO98/07702, PCT Pub. Date Feb. 26, 1998

PCT Filed Aug. 20, 1997, Appl. No. 147,711

Claims priority, application Japan, Aug. 23, 1996, 8-222770

Int. Cl. A61K *31/495;31/55;* **A61P** *37/00;* **C07D** *241/04;295/18*

U.S. Cl. 514—235.8 **6 Claims**

1. A compound having the formula (1):

(I)

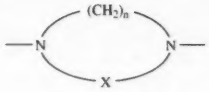
wherein

A is a naphthyl, dihydronaphthyl, indenyl, pyridyl, indolyl, isoindolyl, quinolyl or isoquinolyl, which is optionally substituted;

or a phenyl group substituted by 1 to 3 substituents selected from the group consisting of a hydroxyl group, a lower alkyl group which may be substituted by 1–3 halogen atom(s), a lower alkoxy group, an amino group which may be substituted by one or two lower alkyl group(s) and an alkylthio group;

B is —CH=CH—, —C≡C—, —(CH=CH)$_2$—, —CH=CH—C≡C—, or —C≡C—CH=CH—, or a divalent residue of benzene, pyridine, pyrimidine or a pyrazine, which is optionally substituted; and

W is a formula:



in which X is

wherein n=2,

and wherein:

Y^1 and Y^2 are each independently selected from the group consisting of:

a hydrogen atom;

—$COOR^1$, wherein R^1 is selected from the group consisting of: a hydrogen atom and a lower alkyl group;

—$CON(R^2)R^3$, wherein R^2 and R^3 are each independently hydrogen or hydroxyl or lower alkyl;

—CH_2—$N(R^4)R^5$, wherein R^4 and R^5 are each independently hydrogen or lower alkyl, or R^4 and R^5 form, together with the adjacent nitrogen atom, a heterocyclic ring which may further have an oxygen, nitrogen or sulfur atom; and

—CH_2—S—R^6, wherein R^6 is a lower alkyl, phenyl or pyridyl group;

or Y^1 and Y^2 couple to each other to form an alkylene group which is optionally through oxygen, nitrogen or sulfur;

with the proviso that when B is —CH=CH—, A is not substituted phenyl;

or a salt thereof, or a hydrate or solvate thereof.

US 6,340,683 B1

SELECTIVE NPY (Y5) ANTAGONISTS (TRIAZINES)

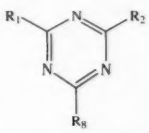
Mohammad R. Marzabadi, Ridgewood; Stewart A. Noble, Upper Saddle River, and Mahesh N. Desai, Clifton, all of N.J., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Filed Apr. 22, 1999, Appl. No. 296,332

Int. Cl. C07D *251/50;251/70;* **A61K** *31/53;* **A61P** *3/04*

U.S. Cl. 514—245 **29 Claims**

1. A compound having the structure:



wherein R_1 is F; Cl; Br; I; NR_3R_4 or heteroaryl, wherein the heteroaryl may be substituted with one or more of F, Cl, Br, I, —CN, —NO_2, —NR_5R_6, —SO_2R_5, —$(CH_2)_nC(Y)R_7$, —$(CH_2)_nYR_5$, —$(CH_2)_nC(Y)NR_5R_6$, —$(CH_2)_nNR_5C(Y)R_5$, —$(CH_2)_nCO_2R$ —$_{(CH2)}{}_n$$SO_2NR_5R_6$, a straight chained or branched C_1–C_7 alkyl, monofluoroalkyl, polyfluoroalkyl, aminoalkyl, C_2–C_7 alkenyl or C_2–C_7 alkynyl, or C_3–C_7 cycloalkyl or a cycloalkenyl;

wherein R_2 is NR_3R_4;

wherein R_3 is independently H; —$(CH_2)_uYR_5$; —$(CH_2)_tC(Y)NR_5R_6$; —$(CH_2)_uNR_5C(Y)R_5$; —$(CH_2)_tC(Y)R_7$; —$(CH_2)_tCO_2R_5$; —$(CH_2)_uNR_5R_6$; —$(CH_2)_uCN$; —$C(Y)R_5$; —$C(Y)NR_5R_6$; —CO_2R_5; straight chained or branched C_1–C_7 alkyl, C_2–C_7 alkenyl, or C_2–C_7 alkynyl; C_3–C_7 cycloalkyl or cycloalkenyl; phenyl; C_1–C_6 phenylalkyl; C_1–C_6, heteroarylalkyl; wherein the phenyl, C_1–C_6 phenylalkyl, or C_1–C_6 heteroarylalkyl may be substituted with one or more of F, Cl, Br, I, —CN, —NO_2, —NR_5R_6, —SO_2R_5, —$(CH_2)_nC(Y)R_7$, —$(CH_2)_nYR_5$, —$(CH_2)_nC(Y)NR_5R_6$, —$(CH_2)_nNR_5C(Y)R_5$, —$(CH_2)_nCO_2R_5$, —$(CH_2)_nSO_2NR_5R_6$, a straight chained or branched C_1–C_7 alkyl, monofluoroalkyl, polyfluoroalkyl, aminoalkyl, C_2–C_7 alkenyl or C_2–C_7 alkynyl, or a C_3–C_7 cycloalkyl or cycloalkenyl;

wherein R_4 is independently —$(CH_2)_uYR_5$; —$(CH_2)_tC(Y)NR_5R_6$; —$(CH_2)_uNR_5C(Y)R_5$; —$(CH_2)_tC(Y)R_7$; —$(CH_2)_tCO_2R_5$; —$(CH_2)_uNR_5R_6$; —$(CH_2)_nCN$; straight chained or branched C_1–C_7 alkyl; straight chained or branched C_2–C_7 alkenyl or C_2–C_7 alkynyl; C_3–C_7 cycloalkyl or cycloalkenyl; phenyl; or C_1–C_6 phenylalkyl; wherein the phenyl or C_1–C_6 phenylalkyl may be substituted with one or more of F, Cl, Br, I, —CN, —NO_2, —NR_5R_6, —SO_2R_5, —$(CH_2)_nC(Y)R_7$, —$(CH_2)_nYR_5$, —$(CH_2)_nC(Y)NR_5R_6$, —$(CH_2)_nNR_5C(Y)R_5$, —$(CH_2)_nCO_2R_5$, —$(CH_2)_nSO_2NR_5R_6$, a straight chained or branched C_1–C_7 alkyl, monofluoroalkyl, polyfluoroalkyl, aminoalkyl, C_2–C_7 alkenyl or C_2–C_7 alkynyl, or a C_3–C_7 cycloalkyl or cycloalkenyl;

or R_3 and R_4 taken together with the nitrogen atom to which they are attached are 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, or 1H-azepanyl, wherein the 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, or 1H-azepanyl is substituted with one or more of F, —CN, —$(CH_2)_nYR_5R_6$, —SO_2R_5, —$(CH_2)_nC(Y)R_7$, —$(CH_2)_nYR_5$, —$(CH_2)_nC(Y)NR_5R_6$, —$(CH_2)_nNR_5C(Y)R_5$, —$(CH_2)_nCO_2R_5$, a straight chained or branched C_1–C_7 alkyl, monofluoroalkyl, polyfluoroalkyl, aminoalkyl, a C_2–C_7 alkenyl or C_2–C_7 alkynyl, a C_3–C_7 cycloalkyl or cycloalkenyl, or phenyl or heteroaryl;

wherein if —$(CH_2)_nNR_5R_6$, —$(CH_2)_nYR_5$, or —$(CH_2)_nNR_5C(Y)R_5$ are in the 2-position, then n is not 0;

wherein the phenyl or heteroaryl may be substituted with one or more of F, Cl, Br, I, —CN, —NO_2, —NR_5R_6, —SO_2R_5, —$(CH_2)_nC(Y)R_7$, —$(CH_2)_nYR_5$, —$(CH_2)_nC(Y)NR_5R_6$, —$(CH_2)_nNR_5C(Y)R_5$, —$(CH_2)_nCO_2R_5$, —$(CH_2)_nSO_2NR_5R_6$, a straight chained or branched C_1–C_7 alkyl, monofluoroalkyl, polyfluoroalkyl, aminoalkyl, a C_2–C_7 alkenyl or C_2–C_7 alkynyl, or a C_3–C_7 cycloalkyl or cycloalkenyl;

or R_3 and R_4 taken together with the nitrogen atom to which they are attached are morpholinyl, thiomorpholinyl, [1,4]oxazepanyl, [1,4]thiazepanyl, piperazinyl, or [1,4]diazepanyl, wherein the morpholinyl, thiomorpholinyl, [1,4]oxazepanyl, [1,4]thiazepanyl, piperazinyl, or [1,4]diazepanyl is substituted with one or more straight chained or branched C_1–C_7 alkyl or C_1–C_7 phenylalkyl; and wherein the nitrogen atom of the piperazinyl or [1,4]diazepanyl ring is substituted with —$(CH_2)_uYR_5$; —$(CH_2)_tC(Y)NR_5R_6$; —$(CH_2)_uNR_5C(Y)R_5$; —$(CH_2)_tC(Y)R_7$; —$(CH_2)_tCO_2R_5$; —$(CH_2)_uNR_5R_6$; —$(CH_2)_uCN$; —$C(Y)R_5$; —$C(Y)NR_5R_6$; —CO_2R_5; straight chained or branched C_1–C_7 alkyl, C_2–C_7 alkenyl, or C_2–C_7 alkynyl; or C_3–C_7 cycloalkyl or cycloalkenyl; phenyl, C_1–C_6 phenylalkyl; or C_1–C_6 heteroarylalkyl; wherein the phenyl, C_1–C_6 phenylalkyl; or C_1–C_6 heteroarylalkyl may be substituted with one or more of F, Cl, Br, I, —CN, —NO_2, —NR_5R_6, —SO_2R_5, —$(CH_2)_nC(Y)R_7$, —$(CH_2)_nYR_5$, —$(CH_2)_nC(Y)NR_5R_6$, —$(CH_2)_nNR_5C(Y)R_5$, —$(CH_2)_nCO_2R_5$, —$(CH_2)_nSO_2NR_5R_6$, a straight chained or branched C_1–C_7 alkyl, monofluoroalkyl, polyfluoroalkyl, aminoalkyl, C_2–C_7 alkenyl or C_2–C_7 alkynyl, or a C_3–C_7 cycloalkyl or cycloalkenyl;

wherein each of R_5, R_6, and R_7 is independently H; or straight chained or branched C_1–C_7 alkyl;

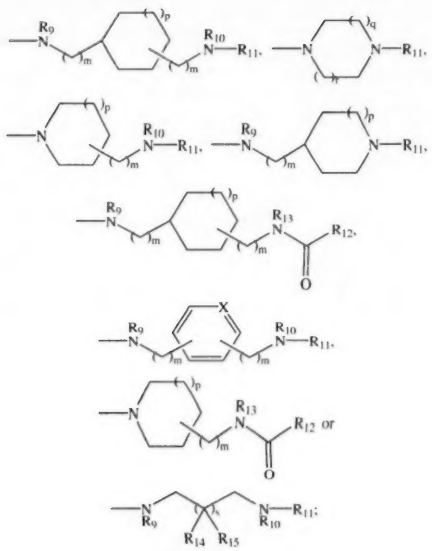
wherein each n independently is an integer from 0 to 6 inclusive;

wherein each t independently is an integer from 1 to 4 inclusive;

wherein each u independently is an integer from 2 to 4 inclusive;

wherein Y is O or S;

wherein R_8 is



provided that if R_8 contains a piperidinyl group and m is 0, then the compound is not an α-aminal-containing compound;

wherein each of R_9 and R_{10} is independently H; straight chained or branched C_1–C_4 alkyl;

wherein R_{11} is

wherein R_{12} is H;

wherein R_{13} is independently H; $—(CH_2)_nYR_5$; $—(CH_2)_rC(Y)NR_5R_6$; $—(CH_2)_nNR_5C(Y)R_5$; $—(CH_2)_rC(Y)R_7$; $—(CH_2)_rCO_2R_5$; $—(CH_2)_nNR_5R_6$; $—(CH_2)_nCN$; $—C(Y)R_5$; $—C(Y)NR_5R_6$; $—CO_2R_5$; straight chained or branched C_1–C_7 alkyl; C_1–C_7 alkyl substituted with one or more F or Cl; C_3–C_7 cycloalkyl-C_1–C_7 alkyl; straight chained or branched C_2–C_7 alkenyl, or alkynyl; or C_3–C_7 cycloalkyl or cycloalkenyl; phenyl or C_1–C_6 phenylalkyl; wherein the phenyl or C_1–C_6 phenylalkyl may be substituted with one or more of F, Cl, —CN, $—NO_2$, $—NR_5R_6$, $—SO_2R_5$, $—(CH_2)_nC(Y)R_7$, $—(CH_2)_nYR_5$, $—(CH_2)_nC(Y)NR_5R_6$, $—(CH_2)_nNR_5C(Y)R_5$, $—(CH_2)_nCO_2R_5$, $—(CH_2)_nSO_2NR_5R_6$, a straight chained or branched C_1–C_7 alkyl, monofluoroalkyl, polyfluoroalkyl, aminoalkyl, a C_2–C_7 alkenyl or C_2–C_7 alkynyl, or a C_3–C_7 cycloalkyl or cycloalkenyl;

or R_{12} and R_{13} together with the amide linkage to which they are attached are pyrrolidinonyl or piperidonyl;

wherein R_{14} is H; straight chained or branched C_1–C_7 alkyl; F; or $—(CH_2)_nOR_5$;

wherein R_{15} is H, straight chained or branched C_1–C_7 alkyl, or F;

wherein R_{16} is NR_3R_4, unsubstituted straight chained or branched C_2–C_7 alkyl, substituted straight chained or branched C_1–C_7 alkyl, wherein the C_1–C_7 alkyl may be substituted with one or more of F, Cl, —CN, $—NR_5R_6$, $—SO_2R_5$, $—(CH_2)_nC(Y)R_7$, $—(CH_2)_nYR_5$, $—(CH_2)_nC(Y)NR_5R_6$, $—(CH_2)_nNR_5C(Y)R_5$, $—(CH_2)_nCO_2R_5$, $—(CH_2)_nOCF_3$, monofluoroalkyl, polyfluoroalkyl, or aminoalkyl, straight chained or branched C_2–C_7 alkenyl or C_2–C_7 alkynyl, or C_3–C_7 cycloalkyl or cycloalkenyl; phenyl, heteroaryl, or C_1–C_7 phenylalkyl, wherein the phenyl, heteroaryl, or C_1–C_7 phenylalkyl may be substituted with one or more of F, Cl, Br, I, —CN, $—NO_2$, $—NR_5R_6$, $—(CH_2)_nNR_5C(Y)R_5$, $—SO_2R_5$, $—(CH_2)_nC(Y)R_7$, $—(CH_2)_nYR_5$, $—(CH_2)_nC(Y)NR_5R_6$, $—(CH_2)_nCO_2R_5$, $—(CH_2)_nSO_2NR_5R_6$, ethylenedioxy, methylenedioxy, straight chained or branched C_1–C_7 alkyl, monofluoroalkyl, polyfluoroalkyl, or aminoalkyl, straight chained or branched C_2–C_7 alkenyl or alkynyl, or C_3–C_7 cycloalkyl or cycloalkenyl; quinolinyl, 1-naphthyl, 2-naphthyl, or 2,1,3-benzothiadiazolyl; with the provisos that when R_1 is F, Cl, Br, or I, then R_{16} is 1-naphthyl; and when R_1 and R_2 are morpholinyl, then R_{16} is not NR_3R_4;

wherein each m independently is an integer from 0 to 3 inclusive;

wherein each s independently is an integer from 1 to 6 inclusive;

wherein each p independently is an integer from 0 to 2 inclusive;

wherein each q independently is an integer from 1 to 2 inclusive;

wherein each r independently is an integer from 1 to 2 inclusive;

wherein X is N or C;

wherein heteroaryl is pyrazolyl, pyrrolyl, furanyl, pyridyl, imidazolyl, oxazolyl, pyrimidinyl, isoxazolyl, or thienyl;

or a pharmaceutically acceptable salt thereof.

US 6,340,684 B1

PHTHALAZINE DERIVATIVES AS PHOSPHODIESTERASE 4 INHIBITORS

Mauro Napoletano, Milan; Gabriele Norcini, Vizzola Ticino; Giancarlo Grancini, Nova Milanese; Franco Pellacini, Milan, and Gabriele Morazzoni, Lainate, all of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

PCT No. PCT/EP99/05068, § 371 Date Jan. 22, 2001, § 102(e) Date Jan. 22, 2001, PCT Pub. No. WO00/05219, PCT Pub. Date Feb. 3, 2000

PCT Filed Jul. 16, 1999, Appl. No. 764,983

Claims priority, application Italy, Jul. 21, 1998, MI98A1671

Int. Cl. A61K *31/502;* **C07D** *401/06;405/14;417/14*

U.S. Cl. 514—248 **9 Claims**

1. A compound selected from the group consisting of:

N-3-acetyl-1-(3,5-dichloropyridin-4-ylmethyl)-5-cyclopentyloxy-6-methoxy-4H-phthalazine;

6,7-dimethoxy-1-pyridin-4-ylmethyl-4-thiazol-2-yl-phthalazine;

1-(6,7-dimethoxy-4-pyridin-4-ylmethyl-1H-phthalazin-2-yl)ethanone;

2-methanesulphonyl-6,7-dimethoxy-4-pyridin-4-ylmethyl-1,2-dihydrophthalazine;

2-formyl-6,7-dimethoxy-4-pyridin-4-ylmethyl-1,2-dihydrophthalazine;

1-(6,7-dimethoxy-4-pyridin-4-ylmethyl-1H-phthalazin-2-yl)-1-imidazol-1-ylmethanone;

1-(3,5-dichloro-pyridin-4-ylmethyl)-3-methansulphonyl-6-*difluoromethoxy-5-(tetrahydro-furan-2-yloxy)-4H*-phthalazine;

N→O derivatives thereof; and pharmaceutically acceptable salts thereof.

US 6,340,685 B1

COMPOUNDS AND METHODS TO TREAT CARDIAC FAILURE AND OTHER DISORDERS

Babu J. Mavunkel, Sunnyvale; John A. Lewicki, Los Gatos; David Y. Liu, Palo Alto; George F. Schreiner, Los Altos Hills, and John J. Perumattam, Los Altos, all of Calif., assignors to Scios, Inc., Sunnyvale, Calif.

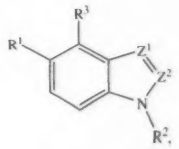
Continuation-in-part of application No. 09/128,137, filed on Aug. 3, 1998, now Pat. No. 6,130,235, Provisional application No. 60/086,531, filed on May 22, 1998. This application Mar. 24, 1999, Appl. No. 275,176.

Int. Cl. A61K *31/496;* **C07D** *403/06*

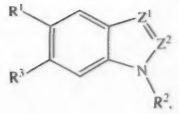
U.S. Cl. 514—253 **12 Claims**

1. A compound of the formula:

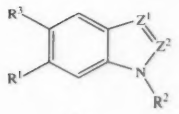
(1)



(2)

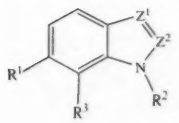


(3)



or

(4)



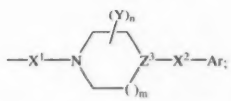
and the pharmaceutically acceptable salts thereof,

wherein each of Z^1 and Z^2 is independently CR^4 or N;

where each R^4 is independently selected from H and alkyl (1–6C);

wherein said alkyl optionally includes one or more heteroatoms selected from O, S and N, and wherein said alkyl is optionally substituted by one or more substituents selected from halo, OR, SR, NR_2, RCO, COOR, $CONR_2$, OOCR, NROCR, CN, =O, a 5 or 6 membered saturated carbocyclic ring or heterocyclic ring containing 1–2 N, and a 6-membered aromatic ring optionally containing 1–2 N heteroatoms, wherein R in the foregoing optional substituents is H or alkyl (1–6C);

R^1 is



wherein

X^1 is CO, SO, CHOH or SO_2;

m is 1;

Y is optionally substituted alkyl, optionally substituted aryl, or optionally substituted arylalkyl;

n is 0, 1 or 2;

Z^3 is N;

X^2 is CH or CH_2; and

Ar consists of one or two phenyl moieties directly coupled to X^2, said one or two phenyl moieties being optionally substituted by a substituent selected from halo, nitro, alkyl (1–6C), alkenyl (1–6C), CN, CF_3, RCO, COOR, $CONR_2$, NR_2, OR, SR, OOCR, NROCR, (wherein R in the foregoing is H or 1–6C alkyl), and phenyl, itself optionally substituted by the foregoing substituents;

R^2 is selected from H, and alkyl (1–6C);

wherein said alkyl optionally includes one or more heteroatoms which are selected from O, S and N, and wherein said alkyl is optionally substituted by one or more substituents selected from halo, OR, SR, NR_2, RCO, COOR, $CONR_2$, OOCR, NROCR, (where R in the foregoing is H or 1–6C alkyl) CN =O, a 5 or 6 membered saturated carbocyclic ring or heterocyclic ring containing 1–2 N, and a 6-membered aromatic ring optionally containing 1–2 N heteroatoms;

with the proviso that if Z^1 and Z^2 are both CH, R^2 is other than H

R^3 is H, halo, NO_2, alkyl (1–6C), alkenyl (1–6C), CN, OR, SR, NR_2, RCO, COOR, $CONR_2$, OOCR, or NROCR where R is H or alkyl (1–6C).

US 6,340,686 B1

THIENOPYRIMIDINE COMPOUNDS, THEIR PRODUCTION AND USE

Shuichi Furuya; Nobuhiro Suzuki; Nobuo Choh, all of Tsukuba, and Yoshi Nara, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

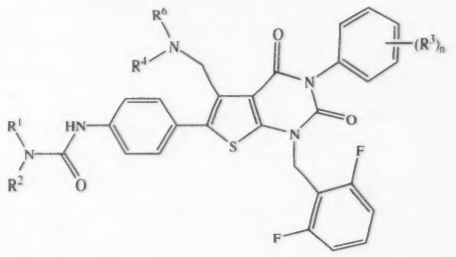
Continuation of application No. 09/530,495, filed as application No. PCT/JP00/01777, filed on Mar. 23, 2000. This application May 16, 2000, Appl. No. 571,215.

Claims priority, application Japan, Mar. 24, 1999, 11-079371; Jan. 25, 2000, 12-018019

Int. Cl. A61K *31/519;* **C07D** *495/06*

U.S. Cl. 514—258 **24 Claims**

1. A compound of the formula:



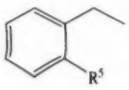
wherein R^1 and R^2 each represents a hydrogen atom, a hydroxy group, a C_{1-4} alkoxy group, a C_{1-4} alkoxy-carbonyl group or a C_{1-4} alkyl group which may be substituted by 1 to 5 substituents selected from the group consisting of (i) hydroxy, (ii) C_{1-7} acyloxy, (iii) benzoyloxy, (iv) amino which may be substituted by 1 or 2 substituents selected from the group consisting of C_{1-6} alkoxy-carbonyl, benzyloxycarbonyl, C_{1-4} acyl, C_{1-4} alkyl and C_{1-3} alkylsulfonyl, (v) C_{1-10} alkoxy, (vi) C_{3-7} cycloalkyloxycarbonyl-C_{1-3} alkoxy and (vii) C_{1-3} alkoxy-C_{1-3} alkoxy;

R^3 represents a hydrogen atom, a halogen atom, a hydroxy group or a C_{1-4} alkoxy group which may be substituted by 1 to 5 substituents selected from the group consisting of (i) hydroxy, (ii) C_{1-7} acyloxy, (iii) benzoyloxy, (iv) amino which may be substituted by 1 or 2 substituents selected from the

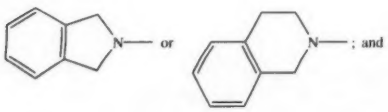
group consisting of C_{1-6} alkoxy-carbonyl, benzyloxycarbonyl, C_{1-4} acyl, C_{1-4} alkyl and C_{1-3} alkylsulfonyl, (v) C_{1-10} alkoxy, *(vi)* C_{3-7} *cycloalkyloxycarbonyl-*C_{1-3} *alkoxy and (vii)* C_{1-3} alkoxy-C_{1-3} alkoxy; or two adjacent R^3 may form, taken together, a C_{1-4} alkylenedioxy group;

R^4 represents a hydrogen atom or a C_{1-4} alkyl group;

R^6 represents a C_{1-4} alkyl group which may be substituted by 1 to 5 substituents selected from the group consisting of (i) hydroxy, (ii) C_{1-7} acyloxy, (iii) benzoyloxy, (iv) amino which may be substituted by 1 or 2 substituents selected from the group consisting of C_{1-6} alkoxycarbonyl, benzyloxycarbonyl, C_{1-4} acyl, C_{1-4} alkyl and C_{1-3} alkylsulfonyl, (v) C_{1-10} alkoxy, (vi) C_{3-7} cycloalkyloxycarbonyl-C_{1-3} alkoxy and (vii) C_{1-3} alkoxy-C_{1-3} alkoxy; or a group of the formula:



wherein R^5 represents a hydrogen atom, or R^4 and R^5 may together form



n represents an integer of 0 to 5, or a salt thereof.

US 6,340,687 B1

SUBSTITUTED TETRAHYDRO-PYRIMIDINE-2(1H)-THIONE HDL-C ELEVATORS USEFUL AS ANTIATHEROSCLEROTIC AGENTS

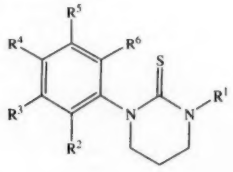
Amedeo A. Failli, Princeton Junction; Jay S. Shumsky, Hightstown; Kevin A. Memoli, Cranbury, all of N.J., and Donald P. Strike, St. Davids, Pa., assignors to American Home Products Corporation, Madison, N.J.

Provisional application No. 60/056,308, filed on Sep. 3, 1997. This application Sep. 2, 1998, Appl. No. 145,895.

Int. Cl. C07D *239/40;* **A61K** *31/513*

U.S. Cl. 514—274 **23 Claims**

1. A compound of the formula:



wherein:

R^1 is, alkyl of 1–6 carbon atoms, cycloalkyl of 3–8 carbon atoms, alkenyl of 2–7 carbon atoms; an

R^2, R^3, R^4, R^5, and R^6 are each, independently, hydrogen, halogen, or alkyl of 1–6 carbon atoms;

or a pharmaceutically acceptable salt thereof.

US 6,340,688 B1

CONTRACEPTION METHOD USING COMPETITIVE PROGESTERONE ANTAGONISTS AND NOVEL COMPOUNDS USEFUL THEREIN

Krzystof Chwalisz; Walter Elger; Karin Schmidt-Gollwitzer, and Eckhard Ottow, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Continuation of application No. 08/433,563, filed on May 3, 1995, which is a continuation of application No. 07/907,514, filed on Jul. 1, 1992, now Pat. No. 5,439,913. This application Sep. 17, 1998, Appl. No. 154,755.

Claims priority, application Germany, May 2, 1992, 42 16 004; May 2, 1992, 42 16 003

Int. Cl. A61K *31/435*

U.S. Cl. 514—277 **12 Claims**

1. A method of contraception in a female, which comprises administering thereto during her menstrual cycle an amount of a competitive progesterone antagonist, which is less than an ovulation-inhibiting dose and less than an abortion-inductive dose.

US 6,340,689 B1

METHODS OF USE OF QUINOLONE COMPOUNDS AGAINST ATYPICAL UPPER RESPIRATORY PATHOGENIC BACTERIA

Jacques Dubois, Fleuramont, and Claude St-Pierre, St-Elie d'Orford, both of Canada, assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Provisional application No. 60/141,409, filed on Jun. 29, 1999, Provisional application No. 60/141,457, filed on Jun. 29, 1999. This application Sep. 14, 1999, Appl. No. 395,851.

Int. Cl. A61K *31/4375*

U.S. Cl. 514—300 **9 Claims**

1. A method for modulating metabolism of an atypical upper respiratory pathogexnic bacteria comprising the step of contacting *atypical upper respiratory pathogenic bacteria with an antibacterial*ly effective amount of a composition comprising a gemifloxacin compound, or an antibacterially effective derivative thereof, and wherein said atypical, upper respiratory pathogenic bacteria is selected from the group consisting of: a *L. dumoffii* strain, a *L. longbeacheae* strain, a *L. micdadei* strain, a *L. oakridgensis* strain, a *L. feelei* strain, a *L. anisa* strain, a *L. sainthelensi* strain, a *L. bozemanii* strain, a *L. gormanii* strain, a *L. wadsworthii* strain, and a *L. jordanis* strain.

US 6,340,690 B1

ANTIVIRAL METHODS USING [1,8]NAPHTHYRIDINE DERIVATIVES

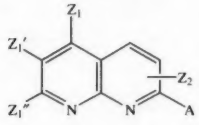
Benoit Bachand, Montréal; Nghe Nguyen-Ba, Laprairie; Arshad Siddiqui, Dollard des Ormeaux, and Sophie Levesque, Mirabel, all of Canada, assignors to Bio-Chem Pharma Inc., Quebec, Canada

Provisional application No. 60/121,080, filed on Feb. 22, 1999. This application Feb. 22, 2000, Appl. No. 507,936.

Int. Cl. A61K *31/435*

U.S. Cl. 514—300 **45 Claims**

1. A method for the inhibition of a viral infection in a mammal, the method comprising administering to the mammal, an antiviral amount of a (1,8) naphthyridine derivative of Formula I or a pharmaceutically acceptable salt thereof;

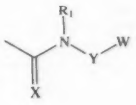


wherein

Z_1, Z_1', Z_1'', and Z_2 are independently H, halogen, carboxyl, amino, amidino, guanidino, nitro, OH, SH, CN, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6}, alkynyl, C_{1-6} alkoxy or C_{1-6} heteroalkyl;

A is

(III)



X is O, NH or S;

Y is O, S, $(CH_2)_n$, $O(CH_2)_n$, or $S(CH_2)_n$; with n is 0 to 6;

R_1 is independently H or C_{1-6} alkyl, C_{2-6} alkenyl, or C_{2-6} alkynyl;

W is C_{6-12} aryl, C_{6-12} heteroaryl, or C_{3-12} heterocycle.

US 6,340,691 B1

ALKYNYL CONTAINING HYDROXAMIC ACID COMPOUNDS AS MATRIX METALLOPROTEINASE AND TACE INHIBITORS

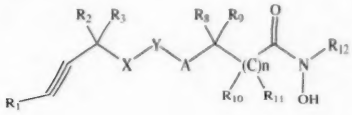
Jeremy I. Levin, New City; Aranapakam M. Venkatesan, Rego Park; Derek C. Cole, New City, all of N.Y.; James M. Chen, Bedminister, N.J.; Jamie M. Davis, Nyack, and George T. Grosu, *Pearl River, both of N.Y., assignors to American* Cyanamid Company, Madison, N.J.

Provisional application No. 60/160,085, filed on Jan. 27, 1999. This application Jan. 27, 2000, Appl. No. 492,977.

Int. Cl. C07D *211/40;209/44;333/56;321/00;* **A61K** *31/47*

U.S. Cl. 514—307 **5 Claims**

1. A compound of formula



wherein:

R_1 is hydrogen, aryl, heteroaryl, alkyl of 1–6 carbon atoms, alkenyl of 2–6 carbon atoms, alkynyl of 2–6 carbon atoms, cycloalkyl of 3–6 carbon atoms, or C_5–C8-cycloheteroalkyl having from 1–2 heteroatoms selected from N, NR_7, S and O;

R_2 and R_3 are each independently, hydrogen, alkyl of 1–6 carbon atoms, —CN, or —CCH;

R_5 is hydrogen, alkyl of 1–8 carbon atoms, cycloalkyl of 3–6 carbon atoms, aryl, heteroaryl, or C4–C8-cycloheteralkyl;

R_7 is hydrogen, aryl, aralkyl, alkyl of 1–6 carbon atoms, or cycloalkyl of 3–6 carbon atoms, oxy, C1–C8 alkanoyl, $COOR_5$, COR_5, $—SO_2—$C1–C8 alkyl, $—SO_2$-aryl, —SO 2-heteroaryl, —CO—NHR_1;

R_8, R_9, R_{10}, and R_{11} are each, independently, hydrogen, aryl, aralkyl, 5–10 membered heteroaryl having from 1–3 heteroatoms selected from N, NR_7, O and S, heteroaralkyl having from 1–3 heteroatoms selected from N, NR_7, O and S, cycloalkyl of 3–6 carbon atoms, $—C_4$–C_8-cycloheteroalkyl having from 1–3 heteroatoms selected from N, NR_7, O and S, alkyl of 1–18 carbon atoms, alkenyl of 2–18 carbon atoms, alkynyl of 2–18 carbon atoms;

R_{12} is hydrogen, aryl or 5–10 membered heteroaryl having from 1–3 heteroatoms selected from N, NR_7, S and O, cycloalkyl of 3–6 carbon atoms, $—C_5$–C8-cycloheteroalkyl having from 1 to 2 heteroatoms selected from N, NR_7, S and O, or alkyl of 1–6 carbon atoms;

A is O, S, SO, SO_2, NR_7, or CH_2;

X is O, S, SO, SO_2, NR_7, or CH_2;

Y is phenyl, with the proviso that A and X are not bonded to adjacent atoms of Y; and

n is 0–2; or a pharmaceutically acceptable salt thereof.

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INJECTABLE ANESTHETIC

Ihor Vasiliovych Ukrayinecz, P/O Bolshaia Danilovka, Mzhk *International, 40* apt. *11*, Kharkiv 62442, and Petro Avsentiyovych Bezuhliy, Prospect 50-let VlKSM, 53 apt. 251, Kharkiv 61120, both of Ukraine

Provisional application No. 60/142,990, filed on Jul. 8, 1999. This application Jul. 7, 2000, Appl. No. 612,656.

Int. Cl. A61K *31/47*

U.S. Cl. 514—312 **4 Claims**

1. A method of inducing anesthesia in a mammal, said method comprising the step of administering intravenously to the mammal a composition of chinoxicaine sufficient to produce infiltration anesthesia.

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PROTECTIVE AGENT FOR NERVOUS SYSTEM *STRUCTURAL CELLS*

Hajimu Kurumatani; Susumu Matsuda, and Mie Kainoh, all of Kanagawa, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP98/01028, § 371 Date Feb. 16, 1999, § 102(e) Date Feb. 16, 1999, PCT Pub. No. WO98/41209, PCT Pub. Date Sep. 24, 1998

PCT Filed Mar. 12, 1998, Appl. No. 180,772

Claims priority, application Japan, Mar. 14, 1997, 9-061489

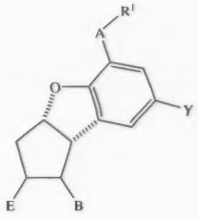
Int. Cl. A61K *31/44;31/34;31/385;31/35;* **C07D** *333/02*

U.S. Cl. 514—337 **11 Claims**

1. A method of protecting nervous system structural cells comprising:

administering to a patient in need thereof an effective amount of a prostaglandin I compound wherein the prostaglandin I compound is a 4,8-inter-m-phenylene prostaglandin I compound represented by the following formula (I) or a pharmacologically acceptable salt thereof

(I)



wherein R^1 represents the following:

(A) $COOR^2$ wherein R^2 is:

1) hydrogen or a pharmacologically acceptable cation;

2) straight chain alkyl having 1 to 12 carbon atoms, or branched alkyl having 3 to 14 carbon atoms;

3) $—Z—R^3$

wherein Z is a valence bond or straight chain or branched alkylene represented by C_tH_{2t} wherein t represents an integer of 1 to 6, and R^3 represents cycloalkyl having 3 to 12 carbon atoms or substituted cycloalkyl having 3 to 12 carbon atoms and 1 to 3 substituents R^4 which is hydrogen or alkyl having 1 to 5 carbon atoms;

4) $—(CH_2CH_2O)_nCH_3$

wherein n is an integer of 1 to 5:

5) $—Z—Ar^1$

wherein Z is defined as the same as the above, and Ar^1 is phenyl, α-naphthyl, β-naphthyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, α-furyl, β-furyl, α-thienyl, β-thienyl or substituted phenyl, wherein a substituent is at least one of chlorine, bromine, fluorine, iodine, trifluoromethyl, alkyl having 1 to 4 carbon atoms, nitro, cyano, methoxy, phenyl, phenoxy,

p-acetamidobenzamide, —CH=N—NH—C(=O)—NH_2, —NH—C(=O)—Ph, —NH—C(=O)—CH_3 and —NH—C(=O)—NH_2;

6) —$C_iH_{2i}COOR^4$

wherein C_iH_{2i} and R^4 are defined as the same as the above;

7) —$C_iH_{2i}N(R^4)_2$

wherein C_iH_{2i} and R^4 are defined as the same as the above;

8) —$CH(R^5)$—C(=O)—R^6

wherein R^5 is hydrogen or benzoyl, and R^6 is phenyl, p-bromophenyl, p-chlorophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl;

9) —C_pH_{2p}—W—R^7

wherein W is —CH=CH—, —CH=CR^7 or —C≡C—, and R^7 is hydrogen or straight chain or branched alkyl or aralkyl having 1 to 30 carbon atoms, and p is an integer of 1 to 5; or

10) —$CH(CH_2OR^8)_2$

wherein R^8 is alkyl or acryl having 10 to 30 carbon atoms;

(B) —CH_2OH;

(C) —C(=O)$N(R^9)_2$

wherein R^9 is hydrogen, straight chain alkyl having 1 to 12 carbon atoms, branched alkyl having 3 to 12 carbon atoms, cycloalkyl having 3 to 12 carbon atoms, cycloalkylalkylene having 4 to 13 carbon atoms, phenyl, substituted phenyl, wherein the substituent is defined as the same as in (A) 5), arakyl having 7 to 12 carbon atoms, or —SO_2R^{10} wherein R^{10} is alkyl having 1 to 10 carbon atoms, cycloalkyl having 3 to 12 carbon atoms, phenyl, substituted phenyl, wherein the substituent is defined as the same as in (A) 5), or aralkyl having 7 to 12 carbon atoms, two R^9 groups may be the same or different, and when one of the R^9 groups is —SO_2R^{10}, the other R^9 is not —SO_2R^{10}; or

(D) —CH_2OTHP, wherein THP is tetrahydropyranyl group;

A is the following:

1) —$(CH_2)_m$—;

2) —CH=CH—CH_2—;

3) —CH_2—CH=CH—;

4) —CH_2—O—CH_2—;

5) —CH=CH—;

6) —O—CH_2—; or

7) —C≡C—;

wherein m represents an integer of 1 to 3;

Y is hydrogen, alkyl having 1 to 4 carbon atoms, chlorine, bromine, fluorine, formyl, methoxy or nitro;

B is —X—$C(R^{11})(R^{12})OR^{13}$

wherein R^{11} is hydrogen, alkyl having 1 to 4 carbon atoms; R^{13} is hydrogen, acyl having 1 to 14 carbon atoms, aroyl having 6 to 15 carbon atoms, tetrahydropyranyl, tetrahydrofuranyl, 1-ethoxyethyl, or t-butyl; X is the following:

1) —CH_2—CH_2;

2) —CH=CH—; or

3) —C≡C; and

R^{12} is the following:

1) straight chain alkyl having 1 to 12 carbon atoms, or branched alkyl having 3 to 14 carbon atoms;

2) —Z—Ar^2

wherein Z is the defined as the same as the above, and Ar^2 represents phenyl, α-naphthyl, β-naphthyl, or phenyl substituted by at least one chlorine, bromine, fluorine, iodine, trifluoromethyl, alkyl having 1 to 4 carbon atoms, nitro, cyano, methoxy, phenyl or phenoxy;

3) —$C_iH_{2i}OR^{14}$

wherein C_iH_{2i} is defined as the same as the above, and R^{14} represents straight chain alkyl having 1 to 6 carbon atoms, branched alkyl having 3 to 6 carbon atoms, phenyl, phenyl substituted by at last one chlorine, bromine, fluorine, iodine, trifluoromethyl, alkyl having 1 to 4 carbon atoms, nitro, cyano, methoxy, phenyl or phenoxy, cyclopentyl, cyclohexyl, or cyclopentyl or cyclohexyl substituted by 1 to 4 straight chain alkyl groups having 1 to 4 carbons atoms;

4) —Z—R^3

wherein Z and R^3 are defined as the same as the above;

5) —C_iH_{2i}—CH=$C(R^{15})R^{16}$

wherein C_iH_{2i} is defined as the same as the above, and R^{15} and R^{16} each represent hydrogen, methyl, ethyl, propyl, or butyl; or

6) —C_uH_{2u}—C≡C—R^{17}

wherein u is an integer of 1 to 7, —C_uH_{2u} represents straight chain or branched alkylene, and R^{17} represents straight chain alkyl having 1 to 6 carbon atoms;

E is hydrogen or —OR^{18}

wherein R^{18} represents acyl having 1 to 12 carbon atoms, aroyl having 7 to 15 carbon atoms, or R^2 wherein R^2, is defined as the same as the above; and

the formula represents the d, l or dl form.

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DIARYLBENZOPYRAN DERIVATIVES AS CYCLOOXYGENASE-2 INHIBITORS

Yung Hyup Joo, Seoul; Chang Hoon Lee, Kyunggi-do; Min-Soo Noh, Seoul; Jun-Yong Ha, Kyunggi-do; Jin Kyu Choi; Kyung Min Lim, both of Suwon-si; Jin Kwan Kim, and Seon-Hwa Kang, both of Seoul, all of Rep. of Korea, assignors to Pacific Corporation, Seoul, Rep. of Korea

PCT No. PCT/KR99/00469, § 371 Date Feb. 20, 2001, § 102(e) Date Feb. 20, 2001, PCT Pub. No. WO00/10993, PCT Pub. Date Mar. 2, 2000

PCT Filed Aug. 20, 1999, Appl. No. 763,146

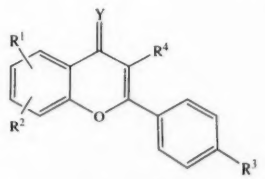
Claims priority, application Rep. of Korea, Aug. 22, 1998, 98-34131

Int. Cl. A61K *31/4433;31/352;* **C07D** *405/04;407/04;409/04;417/04*

U.S. Cl. 514—337 **6 Claims**

1. A compound represented by the following formula(I):

(I)



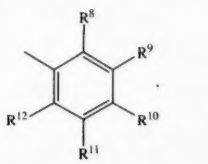
wherein

Y is an oxygen atom or a sulfur atom;

R^1 and R^2, identical to or different from each other, are independently a hydrogen atom, a halogen atom, a C_1–C_6 lower alkyl group, a trifluoromethyl group, an alkoxy group, a hydroxy group, a nitro group, a nitrile group, or a carboxyl group;

R^3 is a group of a formula: S(O)nR^5 wherein n is an integer of 0~2, R^5 is a hydrogen atom, a C_1–C_6 lower alkyl group, or a group of a formula: NR^6R^7 wherein R^6 and R^7, identical to or different from each other, are Independently a hydrogen atom, or a C_1–C_6 lower alkyl group; and

R^4 is oxazolyl, benzo[b]thienyl, furanyl, thienyl, naphthyl, thiazolyl, indolyl, pyrolyl, benzofuranyl, pyrazolyl, pyrazolyl substituted with a C_1–C_6 lower alkyl group, indanyl, pyrazinyl, or a substituted group presented by the following structures:



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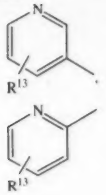
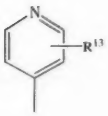


or



wherein

R^8 through R^{12}, identical to or different from one another, are independently a hydrogen atom, a halogen atom, a C_1–C_6 lower alkyl group, a trifluoromethyl group, an alkoxy group, a hydroxy group, a hydroxyalkyl group, a nitro group, a 3,4 -methylenedioxy group, a group of a formula: $S(O)nR^5$, a group of a formula: NR^6R^7, a trifluoromethoxy group, a nitrile group, a carboxyl group, an acetyl group, or a formyl group wherein n, R^5, R^6 and R^7 have the same meaning as defined by R^3 above; and

R^{13} is a hydrogen atom, a halogen atom, a C_1–C_6 lower alkyl group, a trifluoromethyl group, a alkoxy group, a hydroxy group, a trifluoromethoxy group, a carboxyl group, or an acetyl group;

or a pharmaceutically acceptable salt thereof.

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RAPID ONSET FORMULATION

Eric Gervais, Laval, Canada, assignor to Duchesnay Inc., Laval, Canada

Filed Jun. 21, 2001, Appl. No. 885,051

Int. Cl. A61K *31/44*

U.S. Cl. 514—345 **30 Claims**

1. An enterically-coated pyridoxine HCl and doxylamine succinate rapid onset formulation comprising a disintegrating agent such that the following dissolution profiles are satisfied when measured in 1000 ml phosphate buffer at pH 6.8 and 37° C. in a type 2 dissolution apparatus at 100 rpm:

(a) at least about 40% of the total amounts of each of pyridoxine HCl and doxylamine succinate are dissolved after 30 minutes of measurement;

(b) at least about 70% of the total amounts of each of pyridoxine HCl and doxylamine succinate are dissolved after 60 minutes of measurement;

(c) at least about 80% of the total amounts of each of pyridoxine HCl and doxylamine succinate are dissolved after 90 minutes of measurement;

(d) at least about 90% of the total amounts of each of pyridoxine HCl and doxylamine succinate are dissolved after 120 minutes of measurement.

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VIRAL TREATMENT

James Berger Camden, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of application No. 09/535,173, filed on Mar. 27, 2000, now Pat. No. 6,245,788, which is a continuation-in-part of application No. 09/281,895, filed on Mar. 31, 1999, now abandoned. This application Sep. 15, 2000, Appl. No. 663,578.

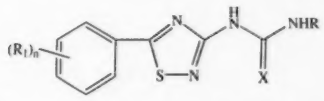
This patent is subject to a terminal disclaimer.

Int. Cl. A61K *31/41;31/7056;38/21*

U.S. Cl. 514—361 **24 Claims**

1. A method of treating a viral infection comprising administering to a patient in need thereof a therapeutically effective amount of a combination of:

(a.) a (5-aryl-1,2,4-thiadiazol)-3-yl thiourea derivative or a (5-aryl-1,2,4-thiadiazol)-3-yl urea derivative having the formula:



wherein X is oxygen or sulfur; R is hydrogen or alkyl having from 1–3 carbons; n is 0–4;

and R_1 is independently selected from the group consisting of hydrogen, alkyl having from 1 to 7 carbon atoms, chloro, bromo, fluoro, oxychloro, and alkoxy having the formula $—O(CH_2)_yCH_3$ wherein y is from 1 to 6; or a pharmaceutical addition salt or a prodrug thereof; and

(b.) ribavirin or interferon or combination of ribavirin and interferon.

US 6,340,697 B1

OXIME DERIVATIVES AND AGRICULTURAL CHEMICALS CONTAINING THE SAME

Takeo Kobori, Atsugi; Tomoko Goto, Sakura; Hitoshi Kondo, Chiba; Hiroyuki Tsuboi, Yachiyo; Mika Iiyama, Sakura; Toru Asada, Inba-gun, and Takashi Goto, Sakura, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP98/05558, § 371 Date Jun. 12, 2000, § 102(e) Date Jun. 12, 2000, PCT Pub. No. WO99/29689, PCT Pub. Date Jun. 17, 1999

PCT Filed Dec. 9, 1998, Appl. No. 581,288

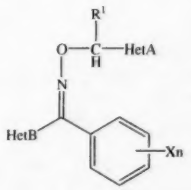
Claims priority, application Japan, Dec. 10, 1997, 9-339790

Int. Cl. C07D *417/12;* **A01N** *43/82*

U.S. Cl. 514—364 **14 Claims**

1. An oxime derivative expressed by the following general chemical formula (1),

(1)

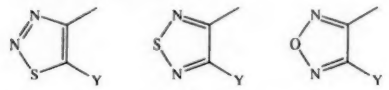


wherein, R^1 represents a hydrogen atom or a lower alkyl group; X represents a halogen atom, a nitro group, a hydroxyl group, a cyano group, a carboxyl group, an alkoxy-carbonyl group, a lower alkyl group which may be substituted with halogen atoms; a lower alkoxy group which may be substituted with halogen atoms; a lower alkylthio group which may be substi-

tuted with halogen atoms; a lower alkylsulfonyl group which may be substituted with a halogen atom; an aryl group which may be substituted with a halogen atom or a lower alkyl group; an aryloxy group which may be substituted with a halogen atom or a lower alkyl group; or an amino group which may be substituted with a lower alkyl group; and n represents an integer from 0 to 3; and

Het A represents a 6-membered aromatic nitrogen-containing ring which contains one or two nitrogen atoms or its benzo-condensation ring-type nitrogen containing aromatic ring which may be substituted with one or two substitutable groups selected from the group consisting of a halogen atom, a lower alkyl group, a lower alkylthio group, a lower alkylsulfonyl group, a lower alkoxy group, a trifluoromethyl group, and a cyano group; and

Het B represents oxime derivatives, each ring structure, expressed by the following formulas,



wherein, Y represents a hydrogen atom, a halogen atom, or a lower alkyl group which may be substituted with a halogen atom.

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ANTIFUNGAL SOLUTIONS

Bernard Charles Sherman, 50 Old Colony Road, Willowdale, ON, Canada, M2L 2K1, assignor to Bernard Charles Sherman, Willowdale, Canada

Filed Nov. 24, 2000, Appl. No. 718,514

Claims priority, application Canada, Nov. 26, 1999, 2291346

Int. Cl. A61K *31/415*

U.S. Cl. 514—400 **20 Claims**

1. A pharmaceutical solution substantially free of cyclodextrin for oral administration comprising itraconazole or saperconazole, an acid, and one or more alcoholic co-solvents, wherein the concentration of alcoholic co-solvent is from greater than about 200 to about 800 mg per mL.

US 6,340,699 B1

SPLA$_2$ INHIBITOR COMPOUNDS FOR TREATMENT OF DISEASE

William Louis Macias, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

PCT No. PCT/US99/08654, § 371 Date Oct. 17, 2000, § 102(e) Date Oct. 17, 2000, PCT Pub. No. WO99/57100, PCT Pub. Date Nov. 11, 1999

Provisional application No. 60/083,874, filed on May 1, 1998. This PCT application Apr. 20, 1999, Appl. No. 673,675.

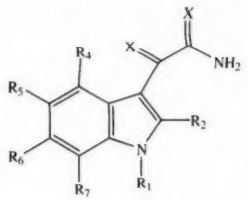
Int. Cl. A61K *31/40*

U.S. Cl. 514—419 **12 Claims**

1. A formulation for treating IBD comprising:

A. 1H-indole-3-glyoxylamide represented by formula

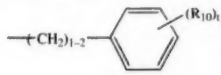
(I)



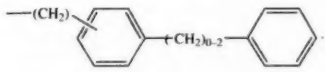
wherein;

both x are oxygen;

R_1 is selected from the group consisting of



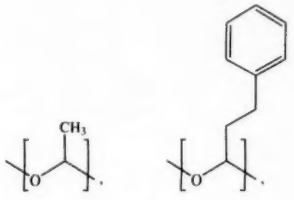
and



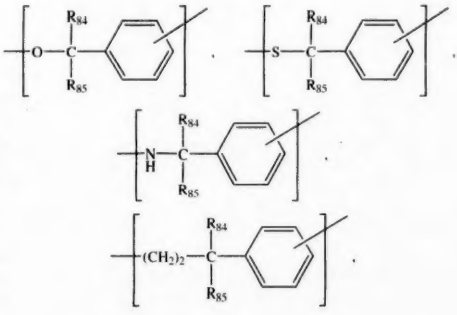
where R_{10} is a radical independently selected from halo, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, —S—(C_1–C_{10} alkyl), and C_1–C_{10} haloalkyl and t is a number from 0 to 5;

R_2 is selected from the group; halo, cyclopropyl, methyl, ethyl, and propyl;

R_4 and R_5 are independently selected from hydrogen, a non-interfering substituent, or the group, —(L_a)-(acidic group); wherein —(L_a)— is an acid linker; provided, the acid linker group, —(L_a)—, for R_4 is selected from the group consisting of;



and provided, the acid linker, —(L_a)—, for R_5 is selected from group consisting of;



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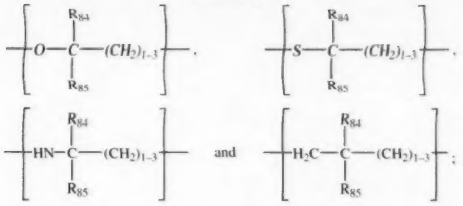


wherein R_{84} and R_{85} are each independently selected from hydrogen, C_1–C_{10} alkyl, aryl, C_1–C_{10} alkaryl, C_1–C_{10} aralkyl, carboxy, carbalkoxy, and halo; and

provided, that at least one of R_4 and R_5 must be the group, —(L_a)-(acidic group) and wherein the (acidic group) on the group —(L_a)-(acidic group) of R_4 or R_5 is selected from —CO_2H, —SO_3H, or —P(O) $(OH)_2$;

R_6 and R_7 are each independently selected form hydrogen and non-interfering substituents, with the non-interfering substituents being selected from the group consisting of the following: C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_7–C_{12} aralkyl, C_7–C_{12} alkaryl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkenyl, phenyl, tolulyl, xylenyl, phenylmethyl, C_1–C_6 alkoxy, C_2–C_6 alkenyloxy, C_2–C_6 alkynyloxy, C_2–C_{12} alkoxyalkyl, C_2–C_{12} alkoxyalkyloxy, C_2–C_{12} alkylcarbonyl, C_2–C_{12} alkylcarbonylamino, C_2–C_{12} alkoxyamino, C_2–C_{12} alkoxyaminocarbonyl, C_2–C_{12} alkylamino, C_1–C_6 alkylthio, C_2–C_{12} alkylthiocarbonyl, C_1–C_6 alkylsulfinyl, C_1–C_6 alkylsulfonyl, C_2–C_6 haloalkoxy, C_1–C_6 haloalkylsulfonyl, C_2– C_6 haloalkyl, C_1–C_6 hydroxyalkyl, —C(O)O(C_1–C_6 alkyl), — $(CH_2)_n$—O—(C_1–C_6 alkyl), benzyloxy, phenoxy, phenylthio, —$(CONHSO_2R)$, —CHO, amino, amidino, bromo, carbamyl, carboxyl, carbalkoxy, —$(CH_2)_n$—CO_2H, chloro, cyano, cyanoguanidinyl, fluoro, guanidino, hydrazide, hydrazino, hydrazido, hydroxy, hydroxyamino, iodo, nitro, phosphono, —SO_3H, thioacetal, thiocarbonyl, and C_1–C_6 carbonyl; where n is from 1 to 8 or a pharmaceutically acceptable salt or aliphatic ester prodrug derivative thereof; and

B) one or more co-agents other than $sPLA_2$ inhibitors selected from the group consisting of:

a. anti-inflammatory agents.

b. antibiotics,

c. steroids,

d. immunosuppressor agents, and

e. diarrhea controlling agents:

C) optionally, a carrier or diluent.

US 6,340,700 B1

2-(IMINOMETHYL) AMINO-PHENYL DERIVATIVES, PREPARATION, APPLICATION AS MEDICINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Pierre Etienne Chabrier de Lassauniere, Paris; Serge Auvin, Mauchamps; Dennis Bigg, Gif-sur-Yvette, and Michel Auguet, Palaiseau, all of France, assignors to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.), France

PCT No. PCT/FR98/00288, § 371 Date Sep. 22, 1999, § 102(e) Date Sep. 22, 1999, PCT Pub. No. WO98/42696, PCT Pub. Date Oct. 1, 1998

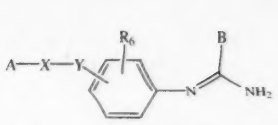
PCT Filed Feb. 16, 1998, Appl. No. 381,749

Claims priority, application France, Mar. 24, 1997, 97 03528

Int. Cl. A61K *31/38;31/35;* **C07D** *333/50;311/76;295/00*

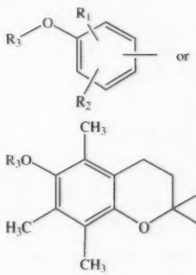
U.S. Cl. 514—438 **12 Claims**

1. A compound selected from the group consisting of a compound of the formula



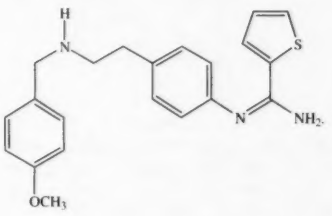
1

wherein A is



R_1 and R_2 are individually selected from the group consisting of hydrogen, halogen, —OH, alkyl of 1 to 6 carbon atoms and alkoxy of 1 to 6 carbon atoms, R_3 is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms and —COR_4, R_4 is alkyl of 1 to 6 carbon atoms, B is selected from the group consisting of thiophene, furan, and pyrrole, X is selected from the group consisting of —Z_1—, —Z_1CO—, —CH=CH—CO—, —Z_1NR_3—CO—, —Z—NR_3—CS—, —Z_1NR_3—SO_2— and a single bond, Y is selected from the group consisting of —Z_2—Q—, —NR_3—Z_2—Q—, —NR_3—CO—Z_2—Q, —NR_3—NH—CO—Z_2—, —NH—NH—Z_2—, —NR_3—O—Z_2—, —NR_3—SO_2—NR_3—Z_2—, —OZ_2—Q—, —O—CO—Z_2—Q— and —S—Z_3—Q—, Q is selected from the group consisting of a single bond, —OZ_3—, —SZ_2— and —NR_3—Z_3, Z_1, Z_2 and Z_3 are individually selected from the group consisting of a single bond and alkylene of 1 to 6 carbon atoms, R_6 is hydrogen or —OH and its non-toxic, pharmaceutically acceptable salts with the proviso that it is not the compound of the formula

E



US 6,340,701 B1

CYTOTOXIC AGENTS COMPRISING TAXANES AND THEIR THERAPEUTIC USE

Ravi V. J. Chari, Newton, and Walter A. Blättler, Brookline, both of Mass., assignors to Immunogen INC, Cambridge, Mass.

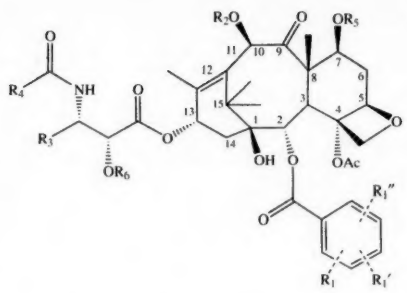
Provisional application No. 60/167,228, filed on Nov. 24, 1999. This application Nov. 22, 2000, Appl. No. 717,026.

Int. Cl. C07D *305/00;* **A61K** *31/30;* **A61P** *43/00*

U.S. Cl. 514—449 **24 Claims**

1. A compound represented by formula (I):

(I)



wherein:

R_1 is F, NO_2, CN, Cl, CHF_2, CF_3, —OCH_3, —OCH_2CH_3, or NR_7R_8, wherein and R_7 and R_8 are the same or different and are linear, branched, or cyclic alkyl having 1 to 10 carbon atoms or simple or substituted aryl having 1 to 10 carbon atoms, and

R_1' and R_1'' are H;

R_2 is —$(CH_2)_nSZ$, —$CO(CH_2)_nSZ$, —$(CH_2)_nCH(CH_3)SZ$, —$CO(CH_2)_nCH(CH_3)SZ$, —$(CH_2)_nC(CH_3)_2SZ$, —$CO(CH_2)_nC(CH_3)_2SZ$, —$CONR_{12}(CH_2)_nSZ$, —$CONR_{12}(CH_2)_nCH(CH_3)SZ$, —$CONR_{12}(CH_2)_nC(CH_3)_2SZ$, —CO-morpholino-XSZ, —CO-piperidino-XSZ, —CO-piperazino-XSZ, or —CO—N-methylpiperazino-XSZ, wherein Z is H or SR, wherein R and R_{12} are the same or different and are linear alkyl, branched alkyl or cyclic alkyl having from 1 to 10 carbon atoms, or simple or substituted aryl having from 1 to 10 carbon atoms or heterocyclic, and R_{12} in addition can be H, X is a linear alkyl or branched alkyl having from 1–10 carbon atoms, and n is an integer of 1 to 10;

R_3 is aryl, or is a linear, branched, or cyclic alkyl having from 1 to 10 carbon atoms;

R_4 is —$OC(CH_3)_3$ or phenyl;

R_5 is H; and

R_6 is H.

US 6,340,702 B1

NEURAMINIC ACID DERIVATIVES, THEIR PREPARATION AND THEIR MEDICAL USE

Takeshi Honda, Tokyo; Yoshiyuki Kobayashi, Sagamihara; Takeshi Masuda, Tokyo; Makoto Yamashita, Urawa, and Masami Arai, Kanagawa-ken, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation-in-part of application No. 09/249,420, filed on Feb. 12, 1999, which is a continuation-in-part of application No. 09/232,539, filed on Jan. 18, 1999, which is a continuation of application No. PCT/JP97/02810, filed on Aug. 12, 1997, which is a continuation of application No. 08/895,952, filed on Jul. 17, 1997. This application Apr. 28, 1999, Appl. No. 301,672.

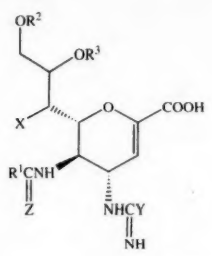
Claims priority, application Japan, Jul. 22, 1996, 8-191862; Aug. 13, 1996, 8-213456; Apr. 4, 1997, 9-86888

Int. Cl. A01N *43/16;* **C07D** *315/00*

U.S. Cl. 514—451 **71 Claims**

1. A compound of formula (1):

(I)



wherein:

R^1 represents an alkyl group having from 1 to 4 carbon atoms;

R^2 and R^3 are the same as or different from each other and each represents a hydrogen atom or an aliphatic acyl group having from 2 to 25 carbon atoms;

X represents a halogen atom or an alkoxy group having from 1 to 4 carbon atoms;

Y represents a group of formula R^bR^cN— or R^bR^cN—O—, where R^b and R^c are the same as or different from each other and each represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms; and

Z represents an oxygen atom or a sulfur atom;

or a pharmaceutically acceptable salt or ester thereof.

US 6,340,703 B1

TREATMENT OR PREVENTION OF OSTEOPOROSIS

Graham E. Kelly, Northbridge, Australia, assignor to Novogen, Inc., Wilmington, Del.

PCT No. PCT/AU98/00313, § 371 Date Jun. 2, 1998, § 102(e) Date Jun. 2, 1998, PCT Pub. No. WO98/50026, PCT Pub. Date Nov. 12, 1998

PCT Filed May 1, 1998, Appl. No. 77,590

Claims priority, application Australia, May 1, 1997, PO6568; Dec. 8, 1997, PP0814

Int. Cl. A61K *31/352;* **A61P** *19/10*

U.S. Cl. 514—456 **19 Claims**

1. A method for the treatment or prevention of osteoporosis comprising administering to a subject in need of such treatment a therapeutically effective amount of the isoflavono formononetin optionally administered with one or more pharmaceutically acceptable adjuvants, carriers and/or excipients.

US 6,340,704 B1

CELL DIFFERENTIATION INDUCING AMIDE DERIVATIVES, THEIR PRODUCTION AND USE

Shogo Marui, Kobe; Masatoshi Hazama, Ikeda, both of Japan; Kohei Notoya, Montreal, Canada, and Koki Kato, Kobe, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP98/01871, § 371 Date Oct. 25, 1999, § 102(e) Date Oct. 25, 1999, PCT Pub. No. WO98/49155, PCT Pub. Date Nov. 5, 1998

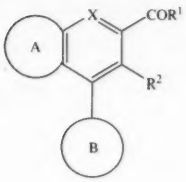
PCT Filed Apr. 23, 1998, Appl. No. 341,803

Claims priority, application Japan, Apr. 25, 1997, 9-109915

Int. Cl. A61K *31/357;31/36;31/166;* **C07D** *317/70;* **C07C** *235/06;* **A61P** *25/28*

U.S. Cl. 514—463 **20 Claims**

1. A compound represented by the formula:



wherein R^1 is an amino group which may be substituted by

(a) a C_{1-6} alkyl group, C_{2-6} alkenyl group, C_{2-6} alkynyl group, C_{3-6} cycloalkyl group, C_{6-14} aryl group or C_{7-16} aralkyl group, which may be substituted by a group selected from the group consisting of (i) a halogen atom, (ii) C_{1-3} alkylenedioxy, (iii)nitro, (iv) cyano, (v) optionally halogenated C_{1-6} alkyl, (vi) optionally halogenated C_{2-6} alkenyl, (vii) optionally halogenated C_{2-6} alkynyl, (viii) C_{3-6} cycloalkyl, (ix) optionally halogenated C_{1-6} alkoxy, (x) optionally halogenated C_{1-6} alkylthio, (xi) hydroxy, (xii) amino, (xiii) mono-C_{1-6} alkyl amino, (xiv) di-C_{1-6} alkyl amino, (xv) 5 or 6 membered cyclic amino, (xvi) acyl amino selected from C_{1-6} alkoxy-carbonyl amino, mono-C_{1-6} alkylaminocarbonyl amino, C_{1-6} alkylcarbonyl amino and C_{1-6} alkylsulfonyl amino, (xvii) C_{1-6} alkylcarbonyl, (xviii) carboxyl, (xix) C_{1-6} alkoxy-carbonyl, (xx) carbamoyl, (xxi) mono-C_{1-6} alkyl-carbamoyl, (xxii) di-C_{1-6} alkyl-carbamoyl, (xxiii) C_{6-10} aryl-carbamoyl, (xxiv) sulfo, (xxv) C_{1-6} alkyl sulfonyl, (xxvi) C_{6-10} aryl and (xvii) C_{6-10} aryloxy,

(b) a hydroxy group which may be substituted by a C_{1-6} alkyl group, C_{2-6} alkenyl group, C_{2-6} alkynyl group, C_{3-6} cycloalkyl group, C_{6-14} aryl group or C_{7-16} aralkyl group, which may be substituted by a group selected from the group consisting of (i) a halogen atom, (ii) C_{1-3} alkylenedioxy, (iii) nitro, (iv) cyano, (v) optionally halogenated C_{1-6} alkyl, (vi) optionally halogenated C_{2-6} alkenyl, (vii) optionally halogenated C_{2-6} alkynyl, (viii) C_{3-6} cycloalkyl, (ix) optionally halogenated C_{1-6} alkoxy, (x) optionally halogenated C_{1-6} alkylthio, (xi) hydroxy, (xii) amino, (xiii) mono-C_{1-6} alkyl amino, (xiv) di-C_{1-6} alkyl amino, (xv) 5 or 6 membered cyclic amino, (xvi) acyl amino selected from C_{1-6} alkoxy-carbonyl amino, mono-C_{1-6} alkylaminocarbonyl amino, C_{1-6} alkylcarbonyl amino and C_{1-6} alkylsulfonyl amino, (xvii) C_{1-6} alkylcarbonyl, (xviii) carboxyl, (xix) C_{1-6} alkoxy-carbonyl, (xx) carbamoyl, (xxi) mono-C_{1-6} alkyl-carbamoyl, (xxii) di-C_{1-6} alkyl-carbamoyl, (xxiii) C_{6-10} aryl-carbamoyl, (xxiv) sulfo, (xxv) C_{1-6} alkyl sulfonyl, (xxvi) C_{6-10} aryl and (xxvii) C_{6-10} aryloxy, or

(c) an amino group which may be substituted by an acyl group represented by any one of the formula: —(C=O)—R^7, —SO_2—R^7, —(C=O)NR^8R^7, —(C=O)O—R^7, —(C=S)O—R^7 or —(C=S)NR^8R^7 wherein R^7 is (a) hydrogen atom or (b) a C_{1-6} alkyl group, C_{2-6} alkenyl group, C_{2-6} alkynyl group, C_{3-6} cycloalkyl group, C_{6-14} aryl group or C_{7-16} aralkyl group, which may be substituted by a group selected from the group consisting of (i) a halogen atom, (ii) C_{1-3} alkylenedioxy, (iii) nitro, (iv) cyano, (v) optionally halogenated C_{1-6} alkyl, (vi) optionally halogenated C_{2-6} alkenyl, (vii) optionally halogenated C_{2-6} alkynyl, (viii) C_{3-6} cycloalkyl, (ix) optionally halogenated C_{1-6} alkoxy, (x) optionally halogenated C_{1-6} alkylthio, (xi) hydroxy, (xii) amino, (xiii) mono-C_{1-6} alkyl amino, (xiv) di-C_{1-6} alkyl amino, (xv) 5 or 6 membered cyclic amino, (xvi) acyl amino selected from C_{1-6} alkoxy-carbonyl amino, mono-C_{1-6} alkylaminocarbonyl amino, C_{1-6} alkylcarbonyl amino and C_{1-6} alkylsulfonyl amino, (xvii) C_{1-6} alkylcarbonyl, (xviii) carboxyl, (xix) C_{1-6} alkoxy-carbonyl, (xx) carbamoyl, (xxi) mono-C_{1-6} alkyl-carbamoyl, (xxii) di-C_{1-6} alkyl-carbamoyl, (xxiii) C_{6-10} aryl-carbamoyl, (xxiv) sulfo, (xxv) C_{1-6} alkyl sulfonyl, (xxvi) C_{6-10} aryl and (xxvii) C_{6-10} aryloxy, and R^8 is hydrogen atom or a C_{1-6} alkyl group, or

(d) R^1 is a group formed by removing a hydrogen atom from a nitrogen atom of a 5 to 9 membered nitrogen-containing heterocycle which may have 1 to 3 hetero atoms selected from a nitrogen atom, an oxygen atom and a sulfur atom, other than carbon atoms and one nitrogen atom, and the nitrogen-containing heterocycle may be substituted by a group selected from the group consisting of (i) a halogen atom, (ii) C_{1-3} alkylenedioxy, (iii) nitro, (iv) cyano, (v) optionally halogenated C_{1-6} alkyl, (vi) optionally halogenated C_{2-6} alkenyl, (vii) optionally halogenated C_{2-6} alkynyl, (viii) C_{3-6} cycloalkyl, (ix) optionally halogenated C_{1-6} alkoxy, (x) optionally halogenated C_{1-6} alkylthio, (xi) hydroxy, (xii) amino, (xiii) mono-C_{1-6} alkyl amino, (xiv) di-C_{1-6} alkyl amino, (xv) 5 or 6 membered cyclic amino, (xvi) acyl amino selected from C_{1-6} alkoxy-carbonyl amino, mono-C_{1-6} alkylaminocarbonyl amino, C_{1-6} alkylcarbonyl amino and C_{1-6} alkylsulfonyl amino, (xvii) C_{1-6} alkylcarbonyl, (xviii) carboxyl, (xix) C_{1-6} alkoxy-carbonyl, (xx) carbamoyl, (xxi) mono-C_{1-6} alkyl-carbamoyl, (xxii) di-C_{1-6} alkyl-carbamoyl, (xxiii) C_{6-10} aryl-carbamoyl, (xxiv) sulfo, (xxv) C_{1-6} alkyl sulfonyl, (xxvi) C_{6-10} aryl and (xxvii) C_{6-10} aryloxy;

R^2 is a hydrogen atom;

X is a methyne group which may be substituted;

a ring A is a 4–10 membered homo-cycle which is substituted by a lower alkylenedioxy;

and a ring B is a homo- or hetero-cycle which may be substituted; or a pharmaceutically acceptable salt thereof.

US 6,340,705 B1

USE OF α-LINOLENIC ACID METABOLITES FOR TREATMENT OR PREVENTION OF CANCER

Mark Obukowicz, Kirkwood; Ayman Kabakibi, Creve Coeur; Susan L. Green, St. Ann; Lisa M. Olson, Richmond Heights, all of Mo., and Julie Lindemann, El Cerrito, Calif., assignors to Monsanto Technology, LLC, St. Louis, Mo.

Filed Sep. 10, 1999, Appl. No. 393,790

Int. Cl. A61K *31/20*

U.S. Cl. 514—560 **23 Claims**

1. A method for treating or preventing cancer in a mammal, said method comprising administering to a mammal in need thereof a pharmaceutical composition consisting essentially of metabolite of α-linolenic acid which is stearidonic acid (18:4 n-3), eicosatetraenoic acid (20:4 n-3), docosapentaenoic acid (22:5 n-3) or mixtures thereof.

US 6,340,706 B1

LEUKOTRIENE-B_4 DERIVATIVES, IN PARTICULAR 7-METHYLCYCLOHEXYL-LTB$_4$ ANTAGONISTS

Bernd Buchmann, Hohen Neuendorf; Wolfgang Frohlich, Berlin; Claudia Giesen, Berlin; Hartwig Hennekes, Berlin; Stefan Jaroch, Berlin, and Werner Skuballa, Berlin, all of Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/EP98/03138, § 371 Date Mar. 10, 2000, § 102(e) Date Mar. 10, 2000, PCT Pub. No. WO98/52914, PCT Pub. Date Nov. 26, 1998

PCT Filed May 22, 1998, Appl. No. 424,449

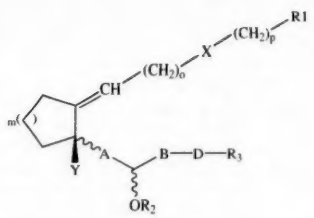
Claims priority, application Germany, May 23, 1997, 197 22 846.1

Int. Cl. A61K *31/20;* **C07C** *69/74*

U.S. Cl. 514—560 **16 Claims**

1. A leukotriene-B_4 derivative of formula I

(I)



wherein

R_1 is CH_2OH, CH_3, CF_3, $COOR_4$, or $CONR_5R_6$,

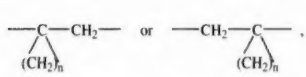
R_2 is H or an organic acid radical with 1–15 C atoms,

R_3 is H; C_1–C_4 alkyl optionally substituted by halogen atoms or phenyl; C_3–C_{10} cycloalkyl optionally substituted in one or more places by C_{1-4} alkyl or halogen atoms; C_6–C_{10} aryl optionally substituted in one or more places by halogen, phenyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoromethyl, chloromethyl, trifluoromethyl, carbonyl, carboxyl or hydroxy; or a 5- to 6-membered aromatic heterocyclic ring with at least 1 heteroatom,

R_4 is hydrogen; C_1–C_{10} alkyl, C_3–C_{10} cycloalkyl, or C_6–C_{10} aryl in each case optionally substituted by 1–3 halogen, phenyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoromethyl, chloromethyl, trifluoromethyl, carboxyl or hydroxy; CH_2—CO—(C_6–C_{10}) aryl; or a 5- to 6-membered ring with at least 1 heteroatom,

A is trans, trans-CH=CH—CH=CH, —CH_2CH_2—CH=CH— or tetramethylene,

B is C_1–C_{10} straight-chain or branched-chain alkylene, which is optionally substituted by fluorine, or is



D is a direct bond, oxygen, sulfur, —C≡C—, —CH=CR_7 or together with B can also be a direct bond;

R_5 and R_6 are the same or different, and are each H or C_1–C_4 alkyl optionally substituted by hydroxy groups, or R_6 is H and R_5 is C_1–C_{15} alkanoyl or R_8SO_2,

R_7 is H, C_1–C_5 alkyl, chlorine, or bromine,

R_8 is H; C_1–C_{14} alkyl optionally substituted by halogen atoms or phenyl; C_3–C_{10} cycloalkyl optionally substituted in one or more places by C_{1-4} alkyl or halogen atoms; C_6–C_{10} aryl optionally substituted in one or more places by halogen, phenyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoromethyl, chloromethyl, trifluoromethyl, carbonyl, carboxyl or hydroxy; or a 5- to 6-membered aromatic heterocyclic ring with at least 1 heteroatom,

m is 1–3,

n is 2–5,

o is 0–5,

p is 0–5,

X is a direct bond, oxygen, or sulfur, and

Y is C_1–C_8 alkyl optionally substituted in one or more places, or C_3–C_{10} cycloalkyl optionally substituted by aryl,

and, if R_4 is hydrogen, salts thereof with physiologically compatible bases and cyclodextrin clathrates thereof.

US 6,340,707 B1

HIGH PURITY, CLEAR, LIGHT STABLE, FORMALDEHYDE-FREE PRESERVATIVE COMPOSITIONS CONTAINING A COMPOUND FORMED BY THE REACTION OF EXCESS GLYCINE AND FORMALDEHYDE AT LOW TEMPERATURES

John J. Merianos, Middletown, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed May 17, 2000, Appl. No. 572,517
Int. Cl. A01N *37/02*
U.S. Cl. 514—578 **6 Claims**

1. A high purity, water-white, clear, light stable, non-toxic, formaldehyde-free composition for inhibiting growth in a substance requiring microbial inhibition comprising about 40–60% by weight of an aqueous solution of hydroxymethylaminoacetate in the form of its alkali metal salt which is formed by the reaction of a salt of glycine, with formaldehyde, in an aqueous medium, at a pH of about 10.5–12.5, characterized by carrying out the reaction at a temperature of about 15–25° C. and at a molar ratio of glycine to formaldehyde sufficient to maintain a molar excess of glycine of 0.5 to 10% in the medium and to leave a predetermined amount of residual glycine present in the composition at the conclusion of the reaction, and to preclude the presence of any detectable free formaldehyde as methylene diol in said composition as a result of unreacted formaldehyde.

US 6,340,708 B1

PHARMACEUTICAL COMPOSITION COMPRISING AT LEAST ONE AMINOPEPTIDASE A INHIBITOR

Catherine Llorens-Cortes, Bures sur Yvette; Pierre Corvol, Paris; Marie-Claude Fournié-Zaluski, Paris, and Bernard Pierre Roques, Paris, all of France, assignors to Institut National de la Sante et de la Recherche Medicale (Inserm), and Centre National de la Recherche Scientifique (C.N.R.S.), both of Paris, France

PCT No. PCT/FR99/00059, § 371 Date Aug. 22, 2000, § 102(e) Date Aug. 22, 2000, PCT Pub. No. WO99/36066, PCT Pub. Date Jul. 22, 1999
PCT Filed Jan. 14, 1999, Appl. No. 600,238
Claims priority, application France, Jan. 16, 1998, 98 00453
Int. Cl. A61K *31/185*
U.S. Cl. 514—578 **14 Claims**

1. Pharmaceutical composition useful for decreasing arterial pressure, comprising as an active principle, at least one selective aminopeptidase A inhibitor.

9. A method for decreasing arterial pressure comprising administering an effective amount of aminopeptidase A inhibitor that crosses the blood brain barrier, in combination where appropriate, with a pharmacologically acceptable vehicle to a patient in need of a such treatment.

US 6,340,709 B1

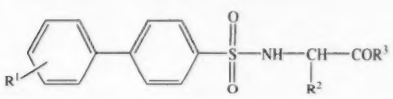
USE OF MATRIX METALLOPROTEINASE INHIBITORS FOR TREATING NEUROLOGICAL DISORDERS AND *PROMOTING WOUND HEALING*

Thomas Michael Andrew Bocan; Peter Alan Boxer, both of Ann Arbor; Joseph Thomas Peterson, Jr., Brighton; Denis Schrier, Ann Arbor, and Andrew David White, Pinckney, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

PCT No. PCT/US97/21532, § 371 Date Mar. 19, 1999, § 102(e) Date Mar. 19, 1999, PCT Pub. No. WO98/26773, PCT Pub. Date Jun. 25, 1998
Provisional application No. 60/032,753, filed on Dec. 17, 1996.
This PCT application Nov. 21, 1997, Appl. No. 269,123.
Int. Cl. A61K *31/18*
U.S. Cl. 514—602 **8 Claims**

1. A method for treating a neurological disorder in a mammal, comprising:

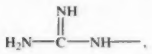
administering to a mammal in need thereof an effective amount of a matrix metalloproteinase inhibitor, wherein the MMP inhibitor utilized is a compound of the formula



wherein:

R^1 is C_1–C_6 allyl, halo, nitro, NR^4R^5, cyano, OR^4, and $COOR^4$;

R^2 is C_1–C_6 alkyl, optionally substituted by phenyl, substituted phenyl, NR^4R^5, OR^6, carboxy, carboxamido,



thio, methylthio, indole, imidazole, phthalimido, phenyl, and substituted phenyl;

R^3 is OH, OC_1–C_6 alkyl, or NHOH;

R^4 is hydrogen, C_1–C_6 alkyl, or C_1–C_6 alkanoyl;

R^5 is hydrogen or C_1–C_6 alkyl; and

R^6 is hydrogen, C_1–C_6 alkyl, C_1–C_6 alkanoyl, phenyl, or substituted phenyl.

US 6,340,710 B1

NON-HAZARDOUS PEST CONTROL

Steven M. Bessette, Brentwood, Tenn., and Myron A. Beigler, Santa Rosa, Calif., assignors to Ecosmart Technologies, Inc., Franklin, Tenn.

Division of application No. 09/056,712, filed on Apr. 8, 1998, now Pat. No. 6,183,767, which is a division of application No. 08/870,560, filed on Jun. 6, 1997, now Pat. No. 6,004,569, which is a continuation-in-part of application No. 08/657,585, filed on Jun. 7, 1996, now Pat. No. 6,114,384, which is a continuation-in-part of application No. 08/553,475, filed as application No. PCT/US94/05823, filed on May 20, 1994, now Pat. No. 5,693,344, which is a continuation-in-part of application No. 08/065,594, filed on May 21, 1993, now Pat. No. 5,439,690. This application Dec. 22, 1999, Appl. No. 469,764.

This patent is subject to a terminal disclaimer.

Int. Cl. A01N *31/14*

U.S. Cl. 514—717 **5 Claims**

1. A method of killing Asian army worm larvae comprising the steps of:

preparing trans-anethole a carrier,

applying the trans-anethole in the carrier to the Asian Army worm larvae and the habitat thereof wherein the Asian army worm larvae are exposed to an effective dosage to kill the Asian army worm larvae.

US 6,340,711 B1

PARTICLES AQUEOUS DISPERSION AND FILM OF TITANIUM OXIDE AND PREPARATION THEREOF

Masahiro Ohmori; Tadashi Hamanaka, both of Ichihara, and Hidenori Nakamura, Kawasaki, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Aug. 29, 1997, Appl. No. 921,343

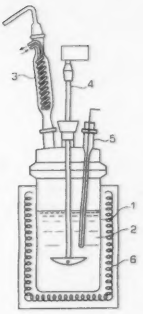
Claims priority, application Japan, Aug. 30, 1996, 8-230776; May 27, 1997, 9-137192

Int. Cl. B01F *3/12*; **C09C** *1/36*; **C01G** *23/053*

U.S. Cl. 516—79 **5 Claims**

1. An aqueous titanium oxide-dispersed sol comprising chloride ions and titanium oxide particles dispersed in water, wherein

said sol comprises said chloride ions in an amount of 50 to 10,000 ppm by weight as the chlorine element;



said sol comprises said titanium oxide particles in an amount of 0.05 to 10 mol/l as the titanium oxide;

said titanium oxide particles have an average particle size of not more than 0.5 μm and a specific surface area of not less than 20 m^2/g; and

said titanium oxide particles, as analyzed by x-ray diffraction after being filtered from the sol and vacuum dried, comprise titanium oxide particles having a brookite structure in an amount of 70% by weight or more based upon the total weight of the titanium oxide particles.

US 6,340,712 B1

NON-CHLORIDE CONTAINING REGENERANT COMPOSITION FOR A STRONG ACID CATION EXCHANGE RESIN OF A WATER SOFTENER

Robert Kunin, Trenton, N.J.; Peter A. Yarnell, Sellersville, Pa., and Nichole L. Pennisi, Newark, Del., assignors to Graver Technologies, Inc., Glasgow, Del.

Filed Feb. 10, 2000, Appl. No. 501,694

Int. Cl. C08F *8/42*

U.S. Cl. 521—26 **8 Claims**

1. A method for regenerating a spent strong acid cation exchange resin without release of chloride comprising the step of contacting said resin with a regenerating amount of a solution of

from about 5 to about 60 weight percent of at least one potassium salt selected from the group consisting of potassium acetate and potassium formate;

from about 0.0005 to about 0.1 weight percent of at least one surfactant;

from about 0.01 to about 1 weight percent of at least one sequestering agent; and the balance water.

US 6,340,713 B1

EXPANDABLE STYRENE POLYMERS CONTAINING GRAPHITE PARTICLES

Guiscard Glück, Mainz; Klaus Hahn, Kirchheim; Knut Kaempfer, Ludwigshafen; Dieter Naegele, Worms, and Frank Braun, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP97/02458, § 371 Date Nov. 15, 1999, § 102(e) Date Nov. 15, 1999, PCT Pub. No. WO98/51735, PCT Pub. Date Nov. 19, 1998

PCT Filed May 14, 1997, Appl. No. 423,613

Int. Cl. C08J *9/00*

U.S. Cl. 521—60 **19 Claims**

1. A particulate expandable styrene polymer which can be processed to give foams having a density of ≦35 g/l and contains

from 0.05 to 8% by weight of homogeneously distributed graphite particles having a mean particle size of from 1 to 50 μm.

US 6,340,714 B1

CHLORIDE-SENSITIVE ELECTRODE MEMBRANE

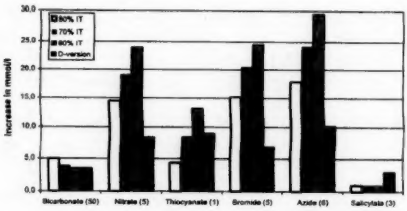
Massoud Ghahramani, Semriach; Helmut Offenbacher, and Christoph Ritter, both of Graz, all of Austria, assignors to F. Hoffmann-La Roche AG, Basel, Switzerland

Filed Sep. 13, 2000, Appl. No. 661,381

Claims priority, application Austria, Sep. 13, 1999, A 1571/99

Int. Cl. C08J *5/22*

U.S. Cl. 521—88 **14 Claims**



1. A chloride-sensitive electrode membrane comprising a polymer matrix with at least one electroactive component, said polymer matrix containing an epoxy resin with an amino compound as a curing agent, wherein said epoxy resin is provided with at least one epoxy resin compatible flexibilizer from a group consisting of propylene glycol diglycidyl ether and cresyl glycidyl ether, and wherein the content of said epoxy resin plus said flexibilizer in said electrode membrane amounts to more than 60% by weight, while that of said electroactive component is not more than 35% by weight.

US 6,340,715 B1

FOAMABLE COMPOSITION ADAPTED FOR DELIVERY FROM PRESSURIZED CONTAINERS, FOR PRODUCING INSULATING FOAMS

Heinrich Sommer, Appenzell, Switzerland, assignor to Rather AG, Appenzell, Switzerland

Filed May 16, 2000, Appl. No. 571,533

Claims priority, application Germany, Jan. 7, 2000, 100 00 327

Int. Cl. C08J *9/04*

U.S. Cl. 521—114 **17 Claims**

1. A pressurized container for providing insulating foams, comprising:

a foamable composition adapted to be delivered from the pressure container, on the basis of an aqueous plastic dispersion, wherein the composition includes at least one film forming aqueous plastic dispersion which has 30 to 80 weight % of film forming plastic, a blowing gas in an amount equal to 3 to 25% of the weight of the total composition, and at least one anionic foam stabilizer for stabilizing the foams and emulsifying the blowing gas in the aqueous plastic dispersion in an amount equal to 0.3 to 6% of the weight of the total composition.

US 6,340,716 B1

IONIC COMPOUNDS WITH DELOCALIZED ANIONIC CHARGE, AND THEIR USE AS ION CONDUCTING COMPONENTS OR AS CATALYSTS

Michel Armand, Montréal, Canada; Christophe Michot, Grenoble, France; Yurii Yagupolskii, Kiev, Ukraine; Lev Yagupolskii, Kiev, Ukraine; Andrej Bezdudny, Kiev, Ukraine, and Natalya Kondratenko, Kiev, Ukraine, assignors to ACEP Inc., Montreal, Canada

PCT No. PCT/FR98/01663, § 371 Date Mar. 25, 1999, § 102(e) Date Mar. 25, 1999, PCT Pub. No. WO99/05100, PCT Pub. Date Feb. 4, 1999

PCT Filed Jul. 27, 1998, Appl. No. 269,264

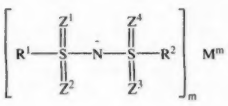
Claims priority, application Canada, Jul. 25, 1997, 2211465

Int. Cl. C07C *381/10;311/48;* **C08K** *5/36;* **C07F** *7/18;* **G02F** *1/15*

U.S. Cl. 522—31 **58 Claims**

1. Ionic compound corresponding to the formula

(VII)



in which:

M^{m+} is a proton or a metal cation having the valency m, chosen from ions of alkali metals, of alkaline-earth metals, of transition metals or of rare-earth metals, or an organic onium cation or an organometallic cation, $1 \leqq m \leqq 3$;

Z^1, Z^2, Z^3 and Z^4, denoted below by Z^i, represent, independently of each other, O, NC≡N, $C(C{\equiv}N)_2$, $NS(=Z)_2R^6$ or $C[S(=Z)_2R^6]_2$, Z having the same meaning as Z^i, with the proviso that, in a segment —S—N—S— not more than 3 groups Z^i represent O and at least one group Z^i represents NC≡N or $C(C{\equiv}N)_2$;

R^1, R^2, R^3, R^4, R^5 and R^6 represent, independently of each other, Y, YO—, YS—, Y_2N— or F;

Y represents a monovalent organic radical chosen from alkyl, alkenyl, oxaalkyl, oxaalkenyl, azaalkyl, azaalkenyl, aryl, alkylaryl, perfluoroalkyl radicals, or radicals obtained from the abovementioned radicals by substitution, in the chains and/or the aromatic part, with atoms chosen from halogens, oxygen, nitrogen, sulfur or phosphorus; with the proviso that if said atom is sulfur or phosphorus, said sulfur or phosphorus atom can optionally be in the form of a —SO— group, a $—SO_2$ group or a >PO— group, or alternatively Y is a repeating unit of a polymeric backbone.

US 6,340,717 B1

METHOD FOR PRODUCING FOAMED PLASTIC BLOCKS BASED ON POLYOLEFIN

Werner Hargarten, Windeck, Germany; Hans Jörg Hartmann, Olten, Switzerland, and Burkhard Voss, Pulheim, Germany, assignors to HT Troplast AG, Troisdorf, Germany, and Studer Draht-und Kabelwerk, Daniken, Switzerland

PCT No. PCT/DE99/01701, § 371 Date Feb. 26, 2001, § 102(e) Date Feb. 26, 2001, PCT Pub. No. WO99/64502, PCT Pub. Date Dec. 16, 1999

PCT Filed Jun. 10, 1999, Appl. No. 719,330

Claims priority, application Germany, Jun. 10, 1998, 198 25 939

Int. Cl. C08F *2/46;* **C08J** *3/28*

U.S. Cl. 522—83 **15 Claims**

1. Process for producing foamed polyolefin-based plastics blocks by

crosslinking a matrix comprising

a) from 51 to 97% by weight of one or more polyolefins, selected from the group consisting of polyethylene and ethylene copolymer,

b) from 3 to 20% by weight of a foaming agent, using β-radiation of energy >6 MeV, where

the thickness of the matrix is from 25 to 45 mm,

the radiation dose is from 20 to 150 kJ/kg, and

during the irradiation, atmospheric oxygen is at least substantially prevented from reaching the surface of the matrix,

foaming the crosslinked matrix by heating to a temperature >160° C. and decomposing the blowing agent.

US 6,340,718 B1

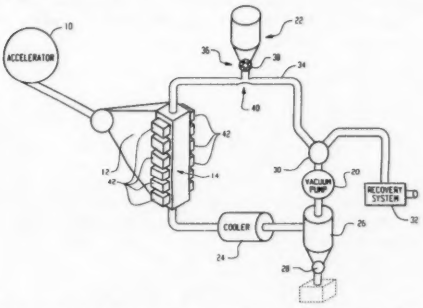
METHOD OF RADIATION TREATMENT FOR FLUOROPOLYMER MATERIALS

Sergey Alexandrovich Korenev, Vernon Hills, Ill.; John Masefield, Far Hills, N.J., and Jerry Kriebel, Lake Villa, Ill., assignors to Steris INC, Temecula, Calif.

Filed Jul. 24, 2000, Appl. No. 624,310

Int. Cl. C08F *2/50*

U.S. Cl. 522—156 **13 Claims**



1. A method of irradiating fluoropolymer materials comprising:

removing oxygen and oxygen containing gases from an irradiation zone to create an oxygen and oxygen containing gas depleted environment;

applying at least one of electric and magnetic fields across the irradiation zone;

pulsing accelerated electrons through the irradiation region of the irradiation zone.

US 6,340,719 B1

CROSSLINKING PROCESS

Siegfried R. Goeb, Willich, and Andreas H. Graichen, Hilden, both of Germany, assignors to 3M-Innovative Properties Company, St. Paul, Minn.

Filed Dec. 29, 1999, Appl. No. 474,532

Int. Cl. C08F *2/46*

U.S. Cl. 522—174 **32 Claims**

1. A process for crosslinking a melt-processed polymer composition comprising the steps of (a) forming a polymerizable mixture comprising (i) at least one monoethylenically-unsaturated monomer or prepolymer and (ii) at least one monoethylenically-unsaturated, blocked mono- or polyisocyanate that is thermally stable at a selected melt processing temperature range and that is thermally deblockable at and above a deblocking temperature that is at least about 10° C. above the maximum temperature (in ° C.) of said selected melt processing temperature range; (b) exposing said polymerizable mixture to transmissive energy to polymerize said mixture to form a polymer composition comprising polymerized units derived from said blocked mono- or polyisocyanate; (c) melt processing said polymer composition at said selected melt processing temperature rang to form a melt-processed polymer composition; and (d) during melt processing or thereafter, increasing the temperature of said melt-processed polymer composition to said deblocking temperature, in the presence of at least one isocyanate-reactive crosslinking agent, to effect crosslinking of said melt-processed polymer composition.

US 6,340,720 B1

PROCESS FOR MAKING POLYVINYLIDENE FLUORIDE POWER COATINGS AND COATING FORMULATIONS

Shiow-Ching Lin, Lawrenceville; Michelle Kelly, Mantua, and Bradley Kent, Sicklerville, all of N.J., assignors to Ausimont USA, Inc., Thorofare, N.J.

Filed Feb. 14, 2000, Appl. No. 503,968

***Int. Cl.* C08J** *3/16;* **C08L** *27/16;* **B05D** *1/02;* **C08K** *3/24;3/28*

U.S. Cl. 523—335 **22 Claims**

1. A process for making a powder coating composition comprising the steps of a) mixing polyvinylidene fluoride ("PVDF") latex with a thermoplastic polymer latex to form a latex blend, b) dispersing pigment into the latex blend, c) adding coagulant to said latex blend to co-coagulate said PVDF latex and said thermoplastic latex to form a precipitate wherein the PVDF and thermoplastic polymer are combined within agglomerated masses, d) separating the precipitate and e) drying the precipitate to obtain a powder coating composition.

US 6,340,721 B1

FLAME-RETARDANT THERMOPLASTIC RESIN COMPOSITION

Ryuki Hashitani, Tokyo; Takeshi Wakao, Nagoya; Masahiko Noro, Tokyo; Hisao Nagai, Tokyo, and Kouji Okada, Tokyo, all of Japan, assignors to Techno Polymer Company Limited, Tokyo, Japan

Division of application No. 08/863,635, filed on May 27, 1997, now Pat. No. 6,136,901. This application Jun. 28, 2000, Appl. No. 605,627.

Claims priority, application Japan, Nov. 4, 1994, 6-295628; Jun. 20, 1996, 8-180178

This patent is subject to a terminal disclaimer.

Int. Cl. C08K *5/15*

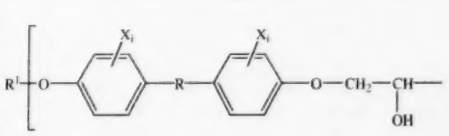
U.S. Cl. 524—109 **18 Claims**

1. A flame-retardant resin composition comprising:

(A) 60 to 98 wt % of a thermoplastic resin comprising a rubber-reinforced resin (A-1) obtained by graft-polymerizing a monomer component (b) comprising an aromatic vinyl compound or an aromatic vinyl compound and other monomer(s) copolymerizable therewith in the presence of a rubber-like polymer (a), a polymer (A-2) obtained by polymerizing the monomer component (b), or a mixture of the resin (A-1) and the polymer (A-2); and

(B) 40 to 2 wt % of a halogen type flame-retardant which comprises a mixture of compounds represented by the following formula (1), the mixture comprising 5 to 60 mol % of a compound (B-1) having epoxy groups at both terminals of the molecular chain, 15 to 70 mol % of a compound (B-2) having epoxy group at one terminal alone and 5 to 80 mol % of a compound (B-3) having no epoxy group at both terminals:

(1)



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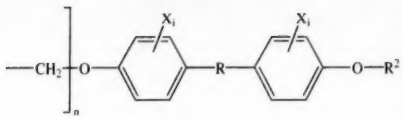
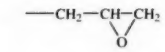
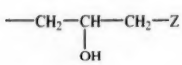


wherein X is a halogen atom such as bromine or chlorine; n is an integer of 0 or more; i is an integer of 1 to 4; R is a same or different groups of $—C(CH_3)_2—$ or $—CH_2—$; and R^1 and R^2 are a same or different groups selected from the group consisting of the following formulae (2) and (3):



(2)



(3)

wherein —Z is a group produced by reacting with a phenolic compound, a carboxylic acid compound, an amine-based compound or an alcoholic compound which are a reagent capable of ring-opening addition reaction with the epoxy groups.

US 6,340,722 B1

POLYMERIZATION, COMPATIBILIZED BLENDING, AND PARTICLE SIZE CONTROL OF POWDER COATINGS IN A SUPERCRITICAL FLUID

Sunggyu Lee; H. Bryan Lanterman, both of Columbia, Mo.; Paul Pettit, Jr., Strongsville, and Kathy L. Fullerton, Cuyahoga Falls, both of Ohio, assignors to The University of Akron, Akron, Ohio

Filed Sep. 4, 1998, Appl. No. 148,364

Int. Cl. C08K *3/28*

U.S. Cl. 524—428 **19 Claims**

1. A process for the production of powder coatings in a fluid at least at a supercritical temperature and at least at a supercritical pressure comprising:

polymerizing monomers to form a polymer for a powder coating in a supercritical fluid, said polymerizing being carried out in said supercritical fluid at supercritical conditions of temperature up to about 190° C.;

compatibilized blending said polymer with additives to form a powder coating in a supercritical fluid; and

particle size classifying said powder coating, without a grinding stage, in a supercritical fluid.

US 6,340,723 B1

HIGHLY ORIENTATED FLAKY PIGMENT AND A PROCESS FOR PRODUCING THE SAME

Katsuhisa Nitta, and Bangyin Li, both of Iwaki, Japan, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Germany

Filed Oct. 5, 2000, Appl. No. 680,506

Claims priority, application Japan, Oct. 5, 1999, 11-283749

Int. Cl. C09C *1/02;* **C08K** *3/18*

U.S. Cl. 524—430 **6 Claims**

1. A highly orientated flaky pigment being excellent in plane orientation, comprising a hydrated metal oxide and one or more phosphates selected from phosphates having perfluoroalkyl groups represented by the formulae (A) and (B) shown below or salts thereof, coated one after another on the surface of a flaky pigment with a pearl gloss;

(A) $(RfC_nH_{2n}O)_mPO(OM)_{3-m}$

(B) $(RfSO_2NRC_nH_{2n}O)_mPO(OM)_{3-m}$

wherein Rf is the same or different and each is a linear or branched C_3 to C_{21} perfluoroalkyl group or perfluoroxyalkyl group, n is 1 to 12, m is 1 to 3, M is hydrogen, an alkali metal, an ammonium group or a substituted ammonium group, and R is hydrogen or a C_1 to C_3 alkyl group.

US 6,340,724 B1

POWDERED RUBBER CONTAINING MODIFIED FILLERS, PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF

Udo Görl, Bornheim-Roisdorf; Reinhard Stober, Hasselroth; Hartmut Lauer, Bad Soden-Salmünster, and Uwe Ernst, Marl, all of Germany, assignors to PKU Pulverkautschuk Union GmbH, Marl, United Kingdom

Filed Apr. 19, 1999, Appl. No. 293,935

Claims priority, application Germany, Apr. 17, 1998, 198 16 972

Int. Cl. C08J *3/00;* **C08K** *3/34;11/00;9/00;* **C08L** *9/00*

U.S. Cl. 524—442 **7 Claims**

1. A finely divided rubber powder comprising:

a) a filler which is solidly bonded to the rubber matrix wherein said filler is modified with organosilicon compounds of the formulas (I), (II) or (III):

$$[R^1_{n-(RO)_{3-n}}Si—(Alk)_m—(Ar)_p]q[B^1] \quad (I),$$

$$R^1_n(RO)_{3-n}Si—(Alk) \quad (II),$$

$$R^1_n(RO)_{3-n}Si—(Alkenyl) \quad (III);\ \text{and}$$

b) a first zone and a second zone wherein said second zone surrounds and is intimately bonded with said first zone, and wherein said first zone and said second zone have a different filler versus rubber matrix content,

in which

q: means 1 or 2

B^1: means —SCN, —SH, —Cl, —NH2 (if q=1) or —Sx—(if q=2)

R and R^1: mean an alkyl group having 1 to 4 carbon atoms branched or unbranched, or a phenyl residue, wherein all residues R and R^1 may each have the same or a different meaning,

n: means 0, 1 or 2,

Alk: means a divalent linear or branched hydrocarbon residue having 1 to 6 carbon atoms,

m: means 0 or 1

Ar: means an arylene residue having 6 to 12 C atoms

p: means 0 or 1, provided that p and n do not simultaneously mean 0,

x: means a number from 2 to 8,

Alkyl: means a monovalent linear or branched saturated hydrocarbon residue having 1 to 20 carbon atoms,

Alkenyl: means a monovalent linear or branched unsaturated hydrocarbon residue having 1 to 20 carbon atoms.

US 6,340,725 B1

INKJET PRINTING MEDIA

Alan E. Wang, Hoffman Estates, Ill.; Louis J. Nehmsmann, Apollo, Pa.; Suk H. Cho, Monroeville, Pa.; Robert H. Tang, and William C. Allison, both of Murrysville, Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of application No. 08/876,070, filed on Jun. 13, 1997. This application Oct. 11, 1999, Appl. No. 416,154.

This patent is subject to a terminal disclaimer.

Int. Cl. C08L *33/26;33/08;33/10;29/04;* **C08K** *5/19*

U.S. Cl. 524—503 **15 Claims**

1. A coating composition comprising:

(a) a volatile aqueous liquid medium; and

(b) binder dissolved or dispersed in the volatile aqueous liquid medium, the binder comprising:

(1) water-soluble film-forming organic polymer which is substantially free of ammonium groups,

(2) water-soluble first cationic addition polymer consisting essentially of quaternary ammonium-containing mer units and ammonium-free mer units, and

(3) water-soluble second cationic addition polymer consisting essentially of secondary, tertiary, or both secondary and tertiary ammonium-containing mer units and ammonium-free mer units,

wherein the binder constitutes from 20 to 90 percent by weight of the solids of the coating composition; and

(c) finely divided substantially water-insoluble filler particles which have a maximum dimension of less than 500 nanometers and constitute from 10 to 80 percent by weight of the solids of the coating composition.

US 6,340,726 B1

SILICONE POLYMER DIOL COMPOSITIONS AND CONDENSATION POLYMER/SILICONE POLYMER BLENDS

David Logan Murray, Fall Branch; Allan Scott Jones, Limestone, and Wesley R. Hale, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Provisional application No. 60/122,625, filed on Mar. 3, 1999. This application Mar. 2, 2000, Appl. No. 518,071.

Int. Cl. C08K *5/5419*

U.S. Cl. 524—731 **10 Claims**

1. A method of making a condensation polymer/silicone polymer blend comprising the steps of:

a. preparing a silicone polymer emulsion comprising

i) a silicone polymer;

ii) a surfactant; and

iii) a liquid continuous phase comprising a diol, wherein the diol comprises from about 25 to about 100% by weight of the continuous phase;

b. introducing the silicone polymer emulsion into a condensation polymerization reaction medium prior to or during the condensation polymerization reaction, wherein the condensation polymerization reaction medium comprises (1) a diacid, di-isocyanate, dialkyl carbonate, diaryl carbonate, dihalo carbonate or a mixture thereof, wherein the condensation polymerization reaction medium may comprise a diol component; and

c. polymerizing the diol and component b(1) thereby forming a condensation polymer/silicone polymer blend.

US 6,340,727 B1

RUBBER BLEND CONTAINING CYCLIZED POLYISOPRENE

Paul Harry Sandstrom, Tallmadge; Joseph Frank Geiser, Uniontown; Judy Chu, Hudson; David John Zanzig, Uniontown, and Richard George Bauer, Kent, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

***Division of application No. 09/824,610, filed on Apr. 2, 2001,* now Pat. No. 6,303,693, which is a division of application No. 09/473,011, filed on Dec. 28, 1999, now Pat. No. 6,262,178. This application Jul. 30, 2001, Appl. No. 918,341.**

Int. Cl. C08L *27/04;33/00;33/14;35/00;39/00*

U.S. Cl. 525—191 **8 Claims**

1. A sulfur cured rubber composition which is comprised of (a) about 5 to about 50 parts by weight cyclized polyisoprene; (b) about 10 to about 70 parts by weight cis 1,4-polyisoprene rubber; and (c) about 5 to about 60 parts by weight of at least one other rubber selected from the group consisting of solution polymerization formed styrene/butadiene copolymer rubber having a styrene/butadiene ratio in the range of about 5/95 to about 30/70, emulsion polymerization formed styrene/butadiene copolymer rubber having a styrene/butadiene ratio in the range of about 10/90 to about 60/40, cis 1,4-polybutadiene rubber, isoprene/butadiene copolymer rubber having an isoprene/butadiene ratio in a range of about 30/70 to about 70/30, styrene/isoprene copolymer rubber having a styrene/isoprene ratio in a range of about 10/90 to about 3 5/65, and styrene/isoprene/butadiene terpolymer rubber.

US 6,340,728 B1

METHOD FOR OLEFIN POLYMERIZATION WITH RECYCLING OF CO-CATALYST

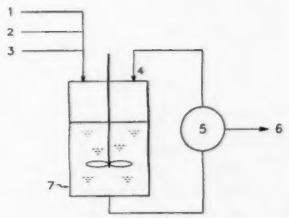
Jae-Seung Oh; Bun-Yeoul Lee, both of Taejon; Yoon-Hyeun Oum, Seoul, and Tai-Ho Park, Yeosoo, all of Rep. of Korea, assignors to LC Chemical Ltd., Rep. of Korea

Filed Jan. 31, 2000, Appl. No. 494,711

Claims priority, application Rep. of Korea, Jan. 30, 1999, 99-3027; Dec. 27, 1999, 99-62906

Int. Cl. C08F *2/14*

U.S. Cl. 526—70 **13 Claims**



1. An olefin polymerization process with recycling of co-catalyst which comprises steps of:

a) preparing activated single-site catalysts by contacting

i) supported single-site pre-catalyst with

ii) an organic solvent containing co-catalysts;

b) separating activated single-site catalysts in a) from an organic solvent containing co-catalysts;

c) olefin polymerization using the separated single-site catalysts in b) with one or more olefinic monomers; and

d) reusing the separated co-catalysts in b) by recycling the organic solvent containing the separated co-catalysts and contacting them with supported single-site pre-catalysts as in a).

US 6,340,729 B1

PROCESS OF POLYMERIZING VINYL CHLORIDE WITH *HYDROXYLAMINES*

Christian Bonardi, Saint-Genis Laval; Pierre Hebrard, Lyons; Richard Peres, Saint-Auban sur Durance, all of France; Kenneth Malone, Philadelphia, Pa.; Martin Nosowitz, Berwyn, Pa.; Michael Mendolia, Philadelphia, Pa.; Peter Callais; Barbara Stainbrook, both of Collegeville, Pa., and Jianfeng Lou, Wayne, Pa., assignors to Atofina Chemicals, Inc., Phila., Pa., and Atofina, France

Provisional application No. 60/220,752, filed on Jul. 26, 2000. This application Jul. 11, 2001, Appl. No. 902,956.

Int. Cl. C08F *2/42;2/38*

U.S. Cl. 526—83 **13 Claims**

1. Process for the aqueous suspension polymerization of vinyl chloride, alone or as a mixture with less than 50% of another vinyl

monomer, characterized in that the polymerization initiator comprises at least one compound chosen from dialkyl peroxydicarbonates, peroxy-tert-alkanoates and diacyl peroxides and in that use is made, as polymerization regulating agent or short-stopper, of a mono- or di alkyl substituted N hydroxylamine, each alkyl radical of which comprises from 1 to 4 carbon atoms in the amount of 0.0005 to 0.1 parts by weight per 100 parts by weight of monomers.

US 6,340,730 B1

MULTIPLE CATALYST SYSTEM

Rex E. Murray, Cross Lanes; Simon Mawson, Charleston; John F. Szul, Nitro; Kersten Anne Erickson, South Charleston, all of W. Va.; Tae Hoon Kwack; Frederick J. Karol, both of Belle Mead, N.J., and David James Schreck, Cross Lanes, W. Va., assignors to Univation Technologies, LLC

Filed Dec. 6, 1999, Appl. No. 455,883

Int. Cl. C08F *4/44;4/16*

U.S. Cl. 526—114 **27 Claims**

1. A process to polymerize olefins comprising reacting olefins with a catalyst system comprising an activator, a metallocene and a second metal compound based on bidentate ligands containing at least one heterocyclic moiety.

US 6,340,731 B1

POLYCARBOMETALLANE

Kirk J. Abbey, Raleigh, N.C.; Fernando J. Gomez, and Kenneth B. Wagener, both of Gainesville, Fla., assignors to Lord Corporation, Cary, N.C.

Provisional application No. 60/082,963, filed on Apr. 24, 1998. This application Apr. 23, 1999, Appl. No. 298,288.

Int. Cl. C08F *30/04*

U.S. Cl. 526—241 **10 Claims**

1. A polymer having a backbone repeat unit that comprises at least two metal atoms bonded to each other and only one ethylenically unsaturated functional group produced by a cyclic diene metathesis polymerization.

US 6,340,732 B1

CONJUGATED POLYMERS

William Feast, Durham, United Kingdom; Rusli Daik, Selangor, Mali; Richard Henry Friend, and Franco Cacialli, both of Cambridge, United Kingdom, assignors to Cambridge Display Technology Limited, United Kingdom

Filed Mar. 31, 1999, Appl. No. 283,127

Claims priority, application United Kingdom, Mar. 31, 1998, 9806947

Int. Cl. C08F *4/08;214/16*

U.S. Cl. 526—291 **17 Claims**

1. A method for synthesizing a poly(arylene vinylene) which method comprises selecting a vinyl monomer by the ratio of cis isomer to trans isomer in the monomer, wherein the ratio is from 80:20 to 20:80, and forming the poly(arylene vinylene) from the vinyl monomer, to obtain photoluminescent or electroluminescent properties in the poly(arylene vinylene) product.

US 6,340,733 B2

FUNCTIONALIZED POLYMER, A METHOD FOR PRODUCING SAME AND CURABLE COMPOSITIONS CONTAINING SAME

Andrew Trevithick Slark, Northallerton; Michael Stephen Chisholm, Yarm Cleveland, and Helen Harte, Middlesbrough, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, United Kingdom

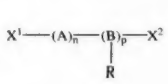
Division of application No. 09/334,979, filed on Jun. 17, 1999, now Pat. No. 6,214,959, which is a continuation of application No. PCT/GB97/03466, filed on Dec. 17, 1997. This application Nov. 30, 2000, Appl. No. 725,574.

Claims priority, application United Kingdom, Dec. 18, 1996, 9626193

Int. Cl. C08F *220/10*

U.S. Cl. 526—328.5 **4 Claims**

1. A composition comprising a copolymer of formula (I)



(I)

wherein

A represents a residue of at least one (meth)acrylate monomeric species;

B represents a residue of at least one monomeric species copolymerizable with A;

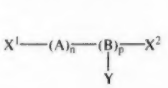
R represents a (meth)acrylate functionalized pendant ester group;

X^1 and X^2 represent terminal groups which may be the same or different;

n and p are both at least one and are chosen such that the copolymer has a number average molecular weight of more than 2000; and

a solvent that is a functionalized oligomeric species having a number average molecular weight of 2000 or less and/or a reactive monomeric species, wherein said copolymer is obtained by

(i) polymerizing by free radical polymerization the at least one (meth)acrylate monomeric species providing residue A with the monomeric species providing residue B to form a copolymer of formula (II)

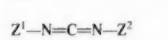


(II)

wherein Y is a pendant reactive group capable of undergoing esterification,

(ii) dissolving the copolymer (II) in the solvent; and thereafter

(iii) esterifying the pendant group Y with a moiety that carries both the reactive group Q capable of undergoing esterification with the group Y and also a (meth)acrylate group so as to form groups R in the presence of a agent of the formula (III)



(III)

wherein

Z^1 and Z^2 are end groups which are capable of assisting in the solubilization of the reagent by the solvent.

US 6,340,734 B1

SILSESQUIOXANE POLYMERS, METHOD OF SYNTHESIS, PHOTORESIST COMPOSITION, AND MULTILAYER LITHOGRAPHIC METHOD

Qinghuang Lin, Wappingers Falls; Marie Angelopoulos, Cortlandt; Ahmad D. Katnani, Poughkeepsie, all of N.Y., and Ratnam Sooriyakumaran, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of application No. 09/146,867, filed on Sep. 3, 1998, now Pat. No. 6,087,064. This application Dec. 7, 1999, Appl. No. 454,563.

Int. Cl. C08G 77/06;77/32

U.S. Cl. 528—15 7 Claims

1. A method of synthesizing a silsesquioxane polymer, said method comprising the steps of:

a) forming a functionalized phenylalkyl silicon-containing compound, wherein:

i) the functionalized phenylalkyl compound possesses a protected hydroxyl moiety and a trihydroxysilane containing moiety on the alkyl moiety;

ii) the alkyl moiety comprises a branched C_2-alkyl group; and

iii) the protected hydroxyl moiety is selected from the group consisting of R_5—COO—, R_6—O—, R_6—O—COO—, and other protected moieties that may be selectively converted to form hydroxyphenylalkyl, wherein R_5 is selected from the group consisting of H, alkyl, aryl, and combinations thereof and R_6 is selected from the group consisting of alkyl, aryl, silyl, and combinations thereof;

b) polymerizing the resulting functionalized phenylalkyl compound to form a silsesquioxane polymer having functional groups; and

c) hydrolyzing at least a portion of said functional groups of the silsesquioxane polymer of step (b) to produce a silsesquioxane polymer that is aqueous base soluble.

US 6,340,735 B1

COATING SOLUTION AND METHOD FOR FORMING DIELECTRIC FILM

Fujio Yagihashi, Gunma-ken, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 31, 2000, Appl. No. 541,084

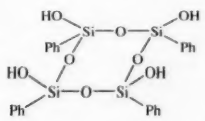
Claims priority, application Japan, Mar. 31, 1999, 11-091325

Int. Cl. C08G 77/06

U.S. Cl. 528—37 6 Claims

1. A process for the preparation of a dielectric film-forming coating solution comprising a poly(phenylsilsesquioxane) ladder polymer having a weight average molecular weight of 4,000 to 100,000 which comprises dehydrating a 1,3,5,7-tetraphenylcyclotetrasiloxane-1,3,5,7-tetraol of the following formula (1):

(1)



wherein Ph is phenyl, in a solvent.

US 6,340,736 B1

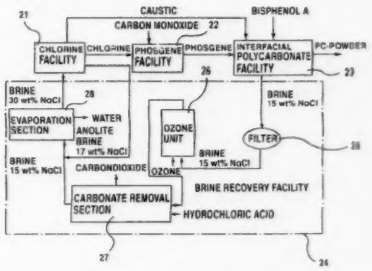
METHOD AND APPARATUS FOR THE PRODUCTION OF POLYCARBONATES WITH BRINE RECYCLING

Nicolaas Petrus Maria Coenen, Bergen Op Zoom; Jan Cornelis Gerritsen, Avenhorn; Rolf Grootveld, Hulst; Martin Herke Oyevaar, SC Goes, all of Netherlands; Raimund Frans Vandenbussche, Berchem, Belgium, and Hendricus Franciscus Zirkzee, Schore, Netherlands, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 29, 1999, Appl. No. 450,409

Int. Cl. C08G 64/00

U.S. Cl. 528—196 22 Claims



1. A method for treating a waste NACl brine stream produced in an interfacial polycarbonate plant to produce a treated brine for use in electrolytic production of chlorine, comprising the steps of

(a) combining the waste brine stream with ozone to produce an ozonated brine in which concentrations of organic contaminants are reduced;

(b) acidifying the ozonated brine to remove carbonates and produce a decarbonated brine; and

(c) concentrating the decarbonated brine to produce a treated brine in which the concentration of NaCl is at least 10 wt % NaCl.

US 6,340,737 B2

POLYCARBONATE RESIN AND OPTICAL ARTICLE USED THE SAME

Noriyoshi Ogawa; Tatsuya Kanagawa, and Hidekazu Nakatani, all of Osaka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 29, 2001, Appl. No. 819,614

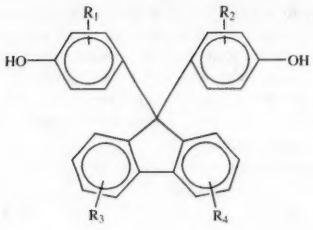
Claims priority, application Japan, Mar. 29, 2000, 12-090094; Dec. 18, 2000, 12-383918

Int. Cl. C08G 64/00

U.S. Cl. 528—196 13 Claims

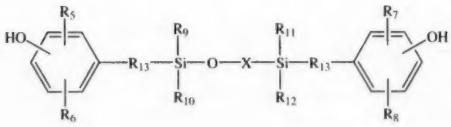
1. A polycarbonate resin produced by reaction of a compound represented by the following general formula (A), a compound represented by the following general formula (B), a compound represented by the following general formula (C) and a carbonic acid ester-forming compound, wherein an amount of a compound represented by the general formula (A) is 30 to 80% by weight to total amount of a compound represented by the general formula (A) and a compound represented by the general formula (B), and a compound represented by the general formula (C) is 1 to 80% by weight to total amount of a compound represented by the general formula (A), a compound represented by the general formula (B) and a compound represented by the general formula (C), and an intrinsic viscosity of said polycarbonate resin is 0.2 to 1.0 dl/g;

(A)



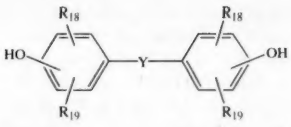
wherein R_1, R_2, R_3 and R_4 are, each independently, hydrogen, an alkyl group having 1 to 5 carbon atoms, an aryl group having 6 to 12 carbon atoms, an alkenyl group having 2 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an aralkyl group having 7 to 17 carbon atoms and when said group has carbon atom, said group can have an alkyl group having 1 to 5 carbon atoms, an alkenyl group having 2 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms as a substituent(s);

(B)



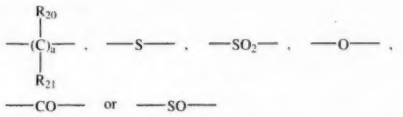
wherein R_5, R_6, R_7 and R_8 are, each independently, hydrogen, an alkyl group having 1 to 5 carbon atoms, an aryl group having 6 to 12 carbon atoms, an alkenyl group having 2 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an aralkyl group having 7 to 17 carbon atoms and when said group has carbon atom, said group can have an alkyl group having 1 to 5 carbon atoms, an alkenyl group having 2 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms as a substituent(s) R_9, R_{10}, R_{11} and R_{12} are, each independently, hydrogen, an alkyl group having 1 to 5 carbon atoms, an aryl group having 6 to 12 carbon atoms, an alkenyl group having 2 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an aralkyl group having 7 to 17 carbon atoms and when said group has carbon atom, said group can have an alkyl group having 1 to 5 carbon atoms, an alkenyl group having 2 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms as a substituent(s); R_{13} is an aliphatic group having 1 to 6 carbon atoms or absent; X is $—SiO(R_{14})(R_{15})—$, $—SiO(R_{16})(R_{17})—$, a homopolymer of $—SiO(R_{14})(R_{15})—$ or $—SiO(R_{16})(R_{17})—$ having an average polymerization degree of more than 0 and 200 or below or a random copolymer of $—SiO(R_{14})(R_{15})—$ and $—SiO(R_{16})(R_{17})—$ having an average polymerization degree of more than 0 and 200 or below; R_{14}, R_{15}, R_{16} and R_{17} are, each independently, hydrogen, an alkyl group having 1 to 5 carbon atoms, an aryl group having 6 to 12 carbon atoms, an alkenyl group having 2 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an aralkyl group having 7 to 17 carbon atoms and when said group has carbon atom, said group can have an alkyl group having 1 to 5 carbon atoms, an alkenyl group having 2 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms as a substituent(s);

(C)



wherein R_{18} and R_{19} are, each independently, hydrogen, an alkyl group having 1 to 10 carbon atoms, an aryl group having 6 to 12 carbon atoms, an alkenyl group having 2 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an aralkyl group having 7 to 17 carbon atoms and when said group has carbon atom, said group can have an alkyl group having 1 to 5 carbon atoms, an alkenyl group having 2 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms as a substituent(s);

Y is;



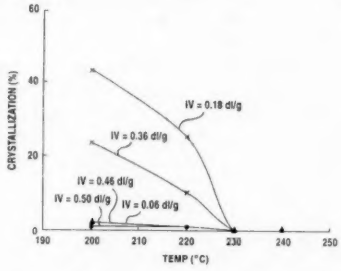
wherein R_{20} and R_{21} are, each independently, hydrogen, an alkyl group having 1 to 10 carbon atoms, an alkenyl group having 2 to 10 carbon atoms, an alkoxy group having 1 to 10 carbon atoms or an aryl group having 6 to 12 carbon atoms, or an aliphatic ring or a heterocycle in combination of R_{20} and R_{21} and when said group has carbon atom, said group can have an alkyl group having 1 to 5 carbon atoms, an alkenyl group having 2 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms as a substituent(s) and a is an integer of 0 to 20, wherein said intrinsic viscosity is measured for the polycarbonate resin in a methylene chloride solution of 0.5 g/dl at 20° C.

US 6,340,738 B2

CONTINUOUS METHOD FOR MANUFACTURING POLYCARBONATE

Tomoaki Shimoda, and Takeshi Sakashita, both of Ichihara, Japan, assignors to General Electric Company, Schenectady, N.Y.

Continuation of application No. 09/464,138, filed on Dec. 16, 1999. This application Apr. 30, 2001, Appl. No. 845,642.
Claims priority, application Japan, Dec. 28, 1998, 10-374458
Int. Cl. C08G *64/00*
U.S. Cl. 528—196 **5 Claims**



1. A polycarbonate composition prepared by a continuous method, which method comprises the steps of:

transesterifying a dihydroxy compound and a carbonic diester to form the polycarbonate, wherein crystalization of a lower polycarbonate polycondensate in an intermediate stage of the reaction is supressed by setting the temperature on a surface

of a reactor apparatus in contact with the lower polycarbonate polycondensate to be at least 230° C., wherein the lower polycarbonate condensate has an intrinsic viscosity (IV) measured at 20° C. in methylene chloride of between 0.1 and 0.4 dL/g.

US 6,340,739 B1

POLYAMIDE AND PROCESS FOR PRODUCING THE SAME

Kiyotaka Shigehara; Yoshihiro Katayama, both of Tokyo; Seiji Nishikawa, and Yasushi Hotta, both of Satte, all of Japan, assignors to Cosmo Research Institute, and Cosmo Oil Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP99/02065, § 371 Date Oct. 20, 2000, § 102(e) Date Oct. 20, 2000, PCT Pub. No. WO99/54384, PCT Pub. Date Oct. 28, 1999

PCT Filed Apr. 19, 1999, Appl. No. 673,740

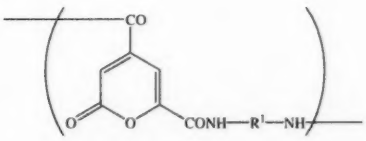
Claims priority, application Japan, Apr. 20, 1998, 10-109180

Int. Cl. C08G *69/26;* **C07D** *309/38*

U.S. Cl. 528—310 **6 Claims**

1. A polyamide having a structural repeating unit represented by formula (1):

(1)



(wherein R^1 represents a divalent hydrocarbon residue optionally having in the structure a heteroatom having no active hydrogen).

US 6,340,740 B1

CASPASE-14, AN APOPTOTIC PROTEASE, NUCLEIC ACIDS ENCODING AND METHODS OF USE

Emad S. Alnemri, and Teresa Fernandez-Alnemri, both of Ambler, Pa., assignors to THomas Jefferson University, Philadelphia, Pa.

Continuation-in-part of application No. 09/139,600, filed on Aug. 25, 1998, Provisional application No. 60/056,986, filed on Aug. 26, 1997. This application Nov. 6, 1998, Appl. No. 187,789.

Int. Cl. C07K *1/00;14/00;* **C12N** *9/00;* **C12P** *21/04*

U.S. Cl. 530—350 **11 Claims**

1. An isolate caspase-14 polypeptide, comprising SEQ ID NO:5.

US 6,340,741 B1

POTENT GENETIC SWITCH ALLOWING REGULATED GENE EXPRESSION IN EUKARYOTIC CELLS

Nicolas Mermod, Buchillon; Markus O. Imhof, Ecublens, and Philippe Chatellard, Lausanne, all of Switzerland, assignors to University of Lausanne, Lausanne, Switzerland

Continuation of application No. 09/128,312, filed on Aug. 3, 1998, now Pat. No. 5,989,910. This application Aug. 9, 1999, Appl. No. 370,683.

This patent is subject to a terminal disclaimer.

Int. Cl. C07K *14/00*

U.S. Cl. 530—350 **2 Claims**

1. A system for controlled transcription of a transgene comprising:

(a) a chimeric repressor protein comprising a DNA-binding tetracycline repressor fused to at least two distinct multimerized eukaryotic transcriptional repression domains;

(b) a tetracycline inducer which, when present, binds to the repressor protein; and

(c) a transactivator which activates expression of said transgene and of its own gene in an autoregulatory positive feedback loop when the repressor protein is bound to the tetracycline inducer.

US 6,340,742 B1

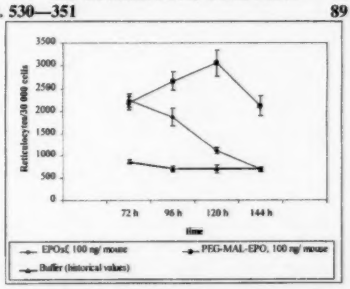
ERYTHROPOIETIN CONJUGATES

Josef Burg, Weilheim; Bernd Hilger, Penzberg, and Hans-Peter Josel, Weilheim, all of Germany, assignors to Roche Diagnostics GmbH, Mannheim, Germany

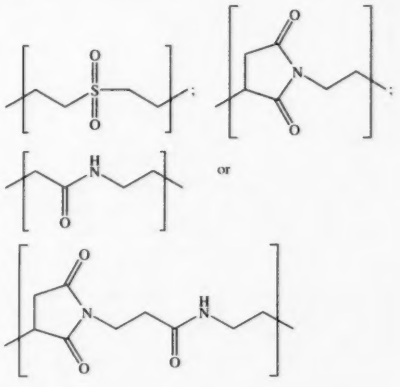
Provisional application No. 60/142,243, filed on Jul. 2, 1999, Provisional application No. 60/147,452, filed on Aug. 5, 1999, Provisional application No. 60/151,454, filed on Aug. 30, 1999. This application Jun. 28, 2000, Appl. No. 604,871.

Int. Cl. A61K *38/18;* **C07K** *14/505*

U.S. Cl. 530—351 **89 Claims**



1. A conjugate, said conjugate comprising an erythropoietin glycoprotein having at least one free amino group and having the in vivo biological activity of causing bone marrow cells to increase production of reticulocytes and red blood cells and selected from the group consisting of human erythropoietin and analogs thereof which have the primary structure of human erythropoietin modified by the addition of from 1 to 6 glycosylation sites or by the rearrangement of at least one glycosylation site; said glycoprotein being covalently linked to from one to three lower-alkoxy poly-(ethylene glycol) groups, each poly(ethylene glycol) group being covalently linked to the glycoprotein via a linker of the formula —C(O)—X—S—Y— with the C(O) of the linker forming an amide bond with one of said amino groups, X is $—(CH_2)_4—$ or $—CH_2(O—CH_2—CH_2)_4—$, k is from 1 to 10, Y is



or

the average molecular weight of each poly(ethylene glycol) group is from about 20 kilodaltons to about 40 kilodaltons, and the molecular weight of the conjugate is from about 51 kilodaltons to about 175 kilodaltons.

US 6,340,743 B1

ANTIBODIES TO PIGR STALK

Keith E. Mostov, and Janice Richman-Eisenstat, both of San Francisco, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of application No. 08/856,383, filed on May 14, 1997, now Pat. No. 6,042,833, Provisional application No. 60/018,958, filed on Jun. 4, 1996. This application Dec. 30, 1999, Appl. No. 475,088.

Int. Cl. C07K *16/28;16/46*

U.S. Cl. 530—387.9 **9 Claims**

1. An antibody that binds specifically to the stalk of a polymeric immunoglobulin receptor (pIgR) of a cell with the proviso that the antibody does not substantially bind to secretory component of pIgR under physiological conditions.

US 6,340,744 B1

REAGENT SYSTEM AND METHOD FOR INCREASING THE LUMINESCENCE OF LANTHANIDE(III) MACROCYCLIC COMPLEXES

Robert C. Leif, 5648 Toyon Rd., San Diego, Calif. 92115-1022, and Lidia Vallarino, 1009 West Ave, Richmond, Va. 23220

Provisional application No. 60/116,316, filed on Jan. 19, 1999. This application Jan. 18, 2000, Appl. No. 484,670.

Int. Cl. A61K *49/00;* **C07F** *5/00;* **G01N** *21/76*

U.S. Cl. 534—15 **40 Claims**

1. A spectrofluorimetrically detectable luminescent composition comprising water, a micelle-producing amount of at least one surfactant, at least 1×10^{-10} moles/liter of at least one energy transfer acceptor lanthanide element macrocycle compound having an emission spectrum peak in the range from 500 to 950 nanometers, and a luminescence-enhancing amount of at least one energy transfer donor compound of yttrium or a 3-valent lanthanide element having atomic number 59–71, provided that the lanthanide element of said macrocycle compound and the lanthanide element of said energy transfer donor compound are not identical.

US 6,340,745 B1

PHTHALOCYANINE AND USE OF PHTHALOCYANINE AS A MARKING AGENT

Frank Meyer, Mannheim; Christos Vamvakaris, Kallstadt; Karin Heidrun Beck, Ludwigshafen; Gerhard Wagenblast, and Bernhard Albert, both of Wachenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP98/02824, § 371 Date Nov. 19, 1999, § 102(e) Date Nov. 19, 1999, PCT Pub. No. WO98/52950, PCT Pub. Date Nov. 26, 1998

PCT Filed May 13, 1998, Appl. No. 423,653

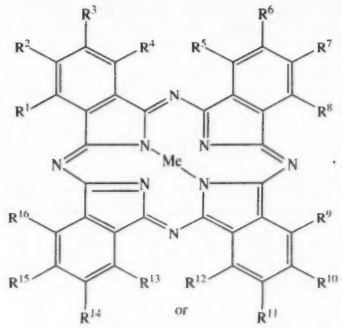
Claims priority, application Germany, May 22, 1997, 197 21 399

Int. Cl. C07D *487/22;* **C09B** *47/04;67/12*

U.S. Cl. 534—702 **11 Claims**

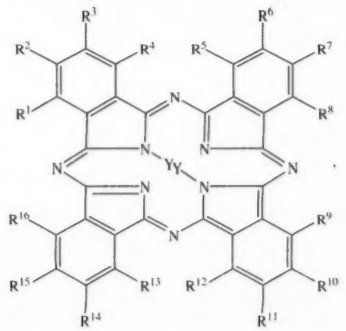
1. A phthalocyanine of formula I' or I"

(I')



or

(I")



wherein:

in formula I', Me is magnesium, zinc, copper, nickel, VO, TiO, AlCl, AlOH, $AlOCOCH_3$, $AlOCOCF_3$, $SiCl_2$ or $Si(OH)_2$, and wherein

in formula I", both Y groups are hydrogen ion or lithium ion, and

at least four of the radicals R^1 to R^{16} in each of formulas I' and I" are each independently of the others a nitrogen-containing heterocyclic radical which is monosubstituted or polysubstituted by C_1–C_4-alkyl, benzyl, phenylethyl or phenyl and is bonded to the phthalocyanine structure via a ring nitrogen atom of the heterocyclic radical which is a member selected from the group consisting of pyrrolidinyl, pyrazolidinyl, imidazolidinyl, oxazolidinyl, isoxazolidinyl, piperidinyl, piperazinyl, morpholinyl and thiomorpholinyl, and any remaining radicals R^1 and R^{16} are each hydrogen, halogen, hydroxysulfonyl of C_1–C_4-dialkylsulfamoyl.

US 6,340,746 B1

PRODRUGS AND CONJUGATES OF THIOL- AND SELENOL- CONTAINING COMPOUNDS AND METHODS OF USE THEREOF

Jeannette C. Roberts; Britta H. Wilmore; Pamela B. Cassidy; Pamela K. Dominick, and Megan D. Short, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

PCT No. PCT/US98/16324, § 371 Date Jul. 20, 2000, § 102(e) Date Jul. 20, 2000, PCT Pub. No. WO99/07719, PCT Pub. Date Feb. 18, 1999

Provisional application No. 60/055,019, filed on Aug. 7, 1997. This PCT application Aug. 6, 1998, Appl. No. 485,321.

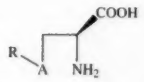
Int. Cl. C07H *15/00;17/00;* **C07D** *305/12;311/04;* **C07C** *205/00*

U.S. Cl. 536—17.4 **9 Claims**

1. A conjugate of an antioxidant vitamin and a thiolamine or selenolamine between an amino functionality on the thiolamine or

selenolamine and a functionality on the antioxidant vitamin reactive with the amino functionality on the thiolamine or selenolamine.

4. A prodrug of the formula:



where A is a sulfur or a selenium, and R is a mono- di- or oligo-saccharide.

US 6,340,747 B1

FLUORESCENT CONJUGATES OF NUCLEOSIDES OR NUCLEOTIDES, PROCESS FOR THEIR PREPARATION AND THEIR USES

Hervé Bazin, Villeneuve les Avignon, and Gérard Mathis, Bagnols sur Ceze, both of France, assignors to CIS BIO International, Saclay, France

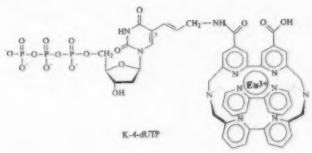
PCT No. PCT/FR98/02111, § 371 Date Apr. 20, 2000, § 102(e) Date Apr. 20, 2000, PCT Pub. No. WO99/18114, PCT Pub. Date Apr. 15, 1999

PCT Filed Oct. 2, 1998, Appl. No. 508,697

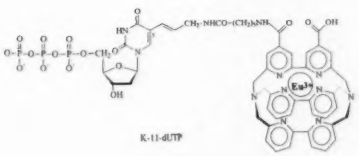
Claims priority, application France, Oct. 3, 1997, 97 12379

Int. Cl. C07H *21/00;* **C12Q** *1/68;* **C07D** *267/02;* **C07F** *5/00*

U.S. Cl. 536—23.1 **22 Claims**



K-4-dUTP



K-11-dUTP

1. A fluorescent conjugate of a nucleoside or nucleotide, comprising:

a ribo- or deoxyribo-nucleoside or -nucleotide which is native, chemically modified or conjugated with one or more labeling molecules, in which either:

(a) at least one carbon atom of the ring or exocyclic nitrogen atom of the purine or pyrimidine ring or of the carbon atom of the pentofuranose unit is able to bond with a fluorescent marker; or

(b) at least one carbon atom of the ring or exocyclic nitrogen atom of the purine or pyrimidine ring is able to bond with a fluorescent marker; and

at least one fluorescent marker consisting of a rare earth cryptate bonded to said atom(s).

US 6,340,748 B1

PROMOTER OF THE TOMATO EXPANSIN GENE LEEXP-1

Seungil Ro, 3300 Kauai Ct., E7, Reno, Nev. 89509, and Nicholas Ewing, 1637 La Paloma Ct., Davis, Calif. 95616

Provisional application No. 60/156,494, filed on Sep. 28, 1999. This application Sep. 27, 2000, Appl. No. 671,545.

Int. Cl. C07H *21/04*

U.S. Cl. 536—24.1 **1 Claim**

1. An isolated promoter sequence shown in SEQ ID NO: 1.

US 6,340,749 B1

PREPARATION OF NUCLEOSIDE PHOSPHORAMIDITES AND OLIGONUCLEOTIDE SYNTHESIS

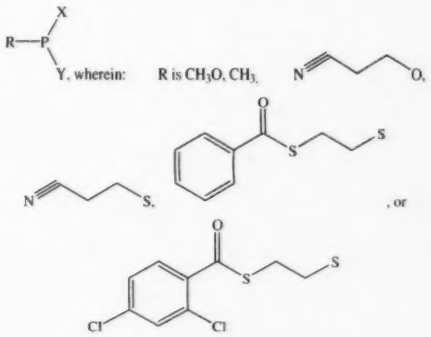
Zhaoda Zhang, and Jin-Yan Tang, both of Shrewsbury, Mass., assignors to Avecia Biotechnology Inc., Milford, Mass.

Continuation-in-part of application No. 08/539,939, filed on Oct. 6, 1995. This application May 9, 1996, Appl. No. 647,354.

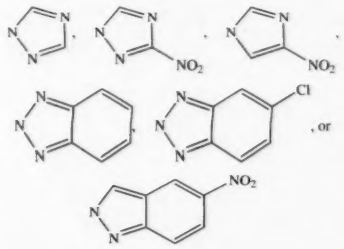
Int. Cl. C07H *21/00*

U.S. Cl. 536—25.34 **6 Claims**

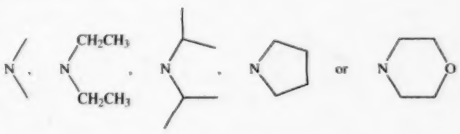
1. A bifunctional phosphitylating reagent having the structure:



wherein the right-most O, C, or S is the point of attachment to phosphorous; X is



wherein the left-most N is the point of attachment to phosphorous; and Y is



wherein the left-most N is the point of attachment to phosphorous.

US 6,340,750 B1

THROUGH BOND ENERGY TRANSFER IN FLUORESCENT DYES FOR LABELLING BIOLOGICAL MOLECULES

Kevin Burgess, Bryan, and Richard Gibbs, Houston, both of Tex., assignors to The Texas A&M University System, College Station, Tex.

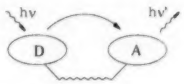
Provisional application No. 60/112,711, filed on Dec. 18, 1998. This application Dec. 14, 1999, Appl. No. 460,718.

Int. Cl. C07H *19/04;21/00;* **C09K** *11/06;* **G01N** *21/01;21/64*

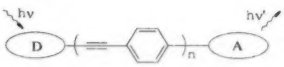
U.S. Cl. 536—26.6 **8 Claims**

a Through space FET from a donor dye **D** to an acceptor dye **A**; **b** through bond FET.

a through space *FET*



b through bond *FET*



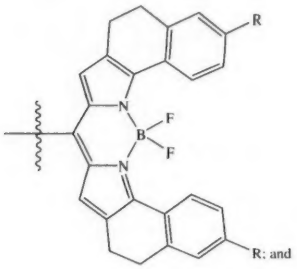
1. A fluorescent dye comprising:

an anthracene derivative; and

a BODIPY fragment; wherein:

the anthracene derivative and the BODIPY fragment are conjugated to each other;

the BODIPY fragment is



R is hydrogen or methoxy.

US 6,340,751 B1

PROCESS FOR THE PREPARATION OF 4-SUBSTITUTED AZETIDINONE DERIVATIVES

Takao Saito; Toshiyuki Murayama; Takaji Matsumoto, and Takashi Miura, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Jul. 19, 1999, Appl. No. 357,153

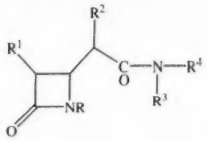
Claims priority, application Japan, Jul. 24, 1998, 10-223724

Int. Cl. C07F *7/18;* **C07D** *205/08;227/087;413/06*

U.S. Cl. 540—200 **27 Claims**

1. A process for the preparation of a 4-substituted azetidinone derivative represented by the following formula (IV):

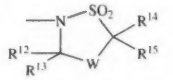
(IV)

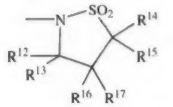


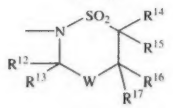
wherein R represents a hydrogen atom or a protecting group for N, R^1 represents a lower alkyl group which may be substituted by a protected or unprotected hydroxyl group, R^2 represents a hydrogen atom or a lower C_{1-4} alkyl group, R^3 represents (1) a C_{1-12} alkyl group, (2) a C_{2-5} alkenyl group, (3) a C_{1-6} organosilyl group selected from the group consisting of tert-butyldimethylsilyl, tert-butyldiphenylsilyl, triethylsilyl, triisopropylsilyl, dimethylthexylsilyl dimethylhexylsilyl and trimethylsilyl, (4) a phenyl group which may be substituted by a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, a nitro group or a halogen atom, (5) a C_{6-13} aralkyl group which may be substituted by a lower C_{1-4} alkyl group, (6) a 5- to 8-membered alicyclic group which may be substituted by a lower C_{1-4} alkyl group or (7) a naphthyl group, and R^4 is an electron withdrawing group selected from a group consisting of $—SO_2R^8$, —C(=X)—Y—R^9, —C(=X)—R^{10}, with the proviso that when R^4 is

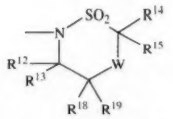
$—SO_2R^8$

R^8 represents (1) a C_{1-12} alkyl group, (2) a phenyl group which may be substituted by a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, a nitro group or a halogen atom, (3) a benzyl group which may be substituted by a lower C_{1-4} alkyl group, (4) a 5- to 7-membered alicyclic group which may be substituted by a lower C_{1-4} alkyl group or (5) a naphthyl group; or R^3 and R^4 may form a heterocyclic ring together with the adjacent nitrogen atom, of the formula:

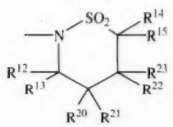








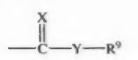
or



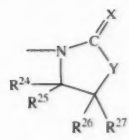
wherein W represents an oxygen atom or a sulfur atom, and R^{12} to R^{23} are the same or different and each independently represents (1) a hydrogen atom, (2) a C_{1-2} alkyl group, (3) a phenyl group which may be substituted by a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, a nitro group or a halogen atom, (4) a benzyl group which may be substituted by a lower C_{1-4} alkyl group, (5) a 5- to

7-membered alicyclic group which may be substituted by a lower C_{1-4} alkyl group, or (6) a naphthyl group; or (7) any two of R^{12} to R^{23} on the same carbon atom may be coupled together to form a C_{4-6} alkylene group, (8) any two of R^{12} and R^{23} on the adjacent carbon atoms may form, together with the carbon atoms, an aromatic ring which may have a substituent wherein said substituent is a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, an aryl group, a hydroxy group or a halogen atom, (9) any two of R^{12} to R^{23} on the adjacent carbon atoms may be coupled together to form a C_{3-6} alkylene group, or (10) any two of R^{12} to R^{23} on the adjacent carbon atoms may form, together with the carbon atoms, a polycyclic group selected form the group consisting of: indan, norbornane, and 1,2,3,4-tetrahydronaphthalene;

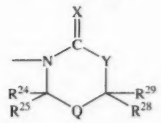
when R^4 is



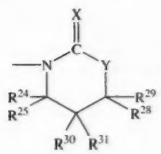
X represents an oxygen atom, a sulfur atom or an NR^{11} group, wherein R^{11} represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted phenyl group, Y represents an oxygen atom or a sulfur atom, R^9 represents (1) a C_{1-12} alkyl group, (2) a phenyl group which may be substituted by a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, a nitro group or a halogen atom, (3) a benzyl group which may be substituted by a lower C_{1-4} alkyl group, (4) a 5- to 7-membered alicyclic group which may be substituted by a lower C_{1-4} alkyl group or (5) a naphthyl group; or R^4 may form a 4- to 6-membered ring together with R^3 and the adjacent nitrogen of the formula:



or



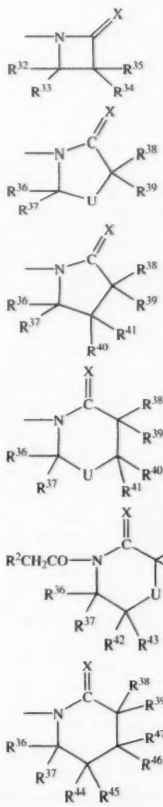
or



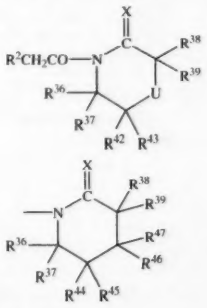
wherein X and Y have the same meanings as defined above, Q represents an oxygen atom or a sulfur atom, and R^{24} to R^{32} are the same or different and each independently represents (1) a hydrogen atom, (2) a C_{1-12} alkyl group, (3) a phenyl group which may be substituted by a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, a nitro group or a halogen atom, (4) a benzyl group which may be substituted by a lower C_{1-4} alkyl group, (5) a 5- to 7-membered alicyclic group which may be substituted by a lower C_{1-4} alkyl group, or (6) a naphthyl group; or (7) any two of R^{24} to R^{31} on the same carbon atom may be coupled together to form a C_{4-6} alkylene group, (8) any two of R^{24} to R^{31} on the adjacent carbon atoms may form, together with the carbon atoms, an aromatic ring which may have a substituent wherein said substituent is a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, an aryl group, a hydroxy group or a halogen atom, (9) any two of R^{24} to R^{31} on the adjacent carbon atoms maybe coupled together to form a C_{3-6} alkylene, group, or (10) any two of R^{24} to R^{31} on the adjacent carbon atoms may form, together with the carbon atoms, a polycyclic group selected from the group consisting of: indan, norbornane, and 1,2,3,4-tetrahydronaphthalene;

when R^4 is

X represents an oxygen atom, a sulfur atom or an NR^{11} group, wherein R^{11} represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted phenyl group, Y represents an oxygen atom or a sulfur atom, R^{10} represents (1) a C_{1-12} alkyl group, (2) a phenyl group which may be substituted by a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, a nitro group or a halogen atom, (3) a benzyl group which may be substituted by a lower C_{1-4} alkyl group, (4) a 5- to 7-membered alicyclic group which may be substituted by a lower C_{1-4} alkyl group or (5) a naphthyl group; or R^4 may form a 4- to 6-membered ring together with R^3 and the adjacent nitrogen of the formula:



or

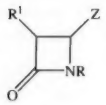


wherein X has the same meaning as defined above, U represents an oxygen atom or a sulfur atom, and R^{32} to R^{47} are the same or different and each independently represents (1) a hydrogen atom, (2) a C_{1-12} alkyl group, (3) a phenyl group which may be substituted by a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, a nitro group or a halogen atom, (4) a benzyl group which may be substituted by a lower C_{1-4} alkyl group, (5) a 5- to 7-membered alicyclic group which may be substituted by a lower C_{1-4} alkyl group, or (6) a naphthyl

group; or (7) any two of R^{32} to R^{47} on the same carbon atom may be coupled together to form a C_{4-6} alkylene group, (8) any two of R^{32} to R^{47} on the adjacent carbon atoms may form, together with the carbon atoms, an aromatic ring which may have a substituent wherein said substituent is a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group, an aryl group, a hydroxy group or a halogen atom, (9) any two of R^{32} to R^{47} on the adjacent carbon atoms may be coupled together to form a C_{3-6} alkylene group, or (10) any two of R^{32} to R^{47} on the adjacent carbon atoms may form, together with the carbon atoms, a polycyclic group selected from the group consisting of: indan, norbornane, and 1,2,3,4-tetrahydronaphthalene;

which comprises reacting an azetidinone derivative represented by the following formula (I):

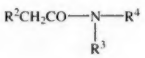
(I)



wherein R represents a hydrogen atom or a protecting group for N, Z represents an eliminative group and R^1 has the same meaning as defined above,

with an amide compound represented by the following formula (II):

(II)



wherein R^2, R^3 and R^4 have the same meaning as defined above, in the presence of a magnesium compound represented by the following formula (III):

$$MgR^5R^6 \quad \text{(III)}$$

wherein R^5 represents (1) a C_{1-12} alkyl group, (2) a C_{2-5} alkenyl group, (3) a 5- to 8-member alicyclic group which may be substituted by a lower C_{1-4} alkyl group, (4) a phenyl group which may be substituted by a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group or a halogen atom, or (5) a benzyl group which may be substituted by a lower C_{1-4} alkyl group, a lower C_{1-4} alkoxy group or a halogen atom, and R^6 represents (1) a halogen atom, (2) a methanesulfonyloxy group, (3) a benzenesulfonyloxy group, (4) a p-toluenesulfonyloxy group, (5) a trifluoromethanesulfonyloxy group, (6) an acetoxy group which may be substituted by a halogen atom or a cyano group, or (7) an OR^7 group wherein R^7 represents a lower C_{1-4} alkyl group, a substituted or unsubstituted phenyl group or a substituted or unsubstituted benzyl group.

US 6,340,752 B1

DEPROTECTION AND RECRYSTALLIZATION PROCESSES

David R. Kronenthal, Yardley, Pa.; Theodor Denzel, Regensburg, Germany; Bang-Chi Chen, Plainsboro, N.J.; James H. Simpson, Belle Mead, N.J., and Rajendra P. Deshpande, Neshanic Station, N.J., assignors to Bristol-Myers Squibb Co., Princeton, N.J.

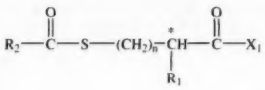
Provisional application No. 60/070,573, filed on Jan. 6, 1998. This application Dec. 9, 1998, Appl. No. 208,135.

Int. Cl. C07D *281/02;513/02*

U.S. Cl. 540—490 **10 Claims**

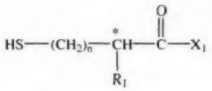
1. A deprotection process for converting the acylmercaptoalkanoylamino lactam acid or ester of the formula

(II)



to the mercaptoalkanoylamino lactam acid or ester of the formula

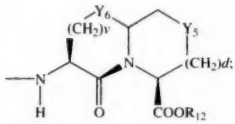
(I)



or for converting the mercaptoalkanoylamino lactam ester of formula I to the corresponding lactam acid of formula I wherein:

X_1 is a lactam of the formula

(XV)



R_1 and R_2 are independently selected from straight or branched chain alkyl of 1 to 6 carbons, $—(CH_2)_m$-aryl, $—(CH_2)_m$-substituted aryl, or $—(CH_2)_m$-heteroaryl;

m is zero or an integer from 1 to 6;

n is zero or one;

d is zero or one;

v is one or two;

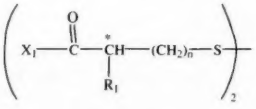
Y_5 is $—CH_2—$, —S—, or —O— provided that Y_5 is —S— or —O— only when d is one;

Y_6 is —S— or —O—; and

R_{12} is hydrogen or an acid protecting group selected from methyl, ethyl, propyl, phenyl or benzyl; which comprises:

a) when R_{12} in the definition of X_1 in formula II is hydrogen, treating the acylmercaptoalkanoylamino lactam acid of formula II with an alkali metal or alkaline earth metal hydroxide or carbonate or with an amine in a suitable solvent *containing a sufficient amount of an agent that minimizes* the amount of the disulfides of the formula

(III)



which, in turn, minimizes the formation of the undesired epimer of the pharmaceutically active compound of formula I followed by treatment with an aqueous acid to precipitate the desired lactam acid of formula I; or

b) when R_{12} in the definition of X_1 in formula II is an acid protecting group, treating the acylmercaptoalkanoylamino lactam ester of formula II under aqueous conditions with an alkali metal or alkaline earth metal hydroxide or carbonate in a suitable solvent containing a sufficient amount of an agent that minimizes the amount of the disulfides of formula III which, in turn, minimizes the formation of the undesired epimer of the pharmaceutically active compound of formula I followed by treatment with an aqueous acid to precipitate the desired lactam acid of formula I; or

c) when R_{12} in the definition of X_1 in formula II is an acid protecting group, treating the acylmercaptoalkanoylamino lactam ester of formula II under non-aqueous conditions with an alkali metal or alkaline earth metal hydroxide or carbonate in a suitable solvent containing a sufficient amount of an agent that minimizes the amount of the disulfides of formula III which, in turn, minimizes the formation of the undesired epimer of the pharmaceutically active compound of formula I or treating the acylmercaptoalkanoylamino lactam ester of formula II under aqueous conditions with an amine in a suitable solvent containing a sufficient amount of an agent that minimizes the amount of the disulfides of formula III which, in turn, minimizes the formation of the undesired epimer of the pharmaceutically active compound of formula I thus removing the acyl protecting group R_2—C(O)— to give the mercaptoalkanoylamino lactam ester of formula I; or

d) treating the mercaptoalkanoylamino lactam ester of formula I under aqueous conditions with an alkali metal or alkaline earth metal hydroxide or carbonate in a suitable solvent containing a sufficient amount of an agent that minimizes the amount of the disulfides of formula III which, in turn, minimizes the formation of the undesired epimer of the pharmaceutically active compound of formula I followed by treatment with an aqueous acid to precipitate the desired mercaptoalkanoylamino lactam acid of formula I.

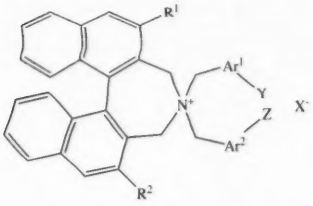
US 6,340,753 B1

OPTICALLY ACTIVE QUARTERNARY AMMONIUM SALT WITH AXIAL CHIRALITY, METHOD FOR PRODUCING THEREOF, AND APPLICATION THEREOF FOR ASYMMETRIC SYNTHESIS OF α-AMINO ACID

Keiji Maruoka, Ohtsu, Japan, assignor to Nagase & Co., Ltd., Osaka, Japan

Filed Jul. 13, 2000, Appl. No. 616,361
Int. Cl. C07D *223/14*
U.S. Cl. 540—543 **8 Claims**

1. A compound of formula (I):



I

wherein

R^1 and R^2 are groups independently selected from the group consisting of a hydrogen atom; a linear alkyl group having 1 to 6 carbon atoms; a branched alkyl group having 2 to 6 carbon atoms; a cyclic alkyl group having 3 to 6 carbon atoms; a linear alkenyl group having 2 to 6 carbon atoms; a branched alkenyl group having 2 to 6 carbon atoms; a cyclic alkenyl group having 3 to 6 carbon atoms; a linear alkynyl group having 2 to 6 carbon atoms; a branched alkynyl group having 3 to 6 carbon atoms; a cyclic alkynyl group having 3 to 6 carbon atoms; an aralkyl group which may be substituted with an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 3 carbon atoms or a halogen atom; a heteroaralkyl group selected from the group consisting of pyridylmethyl, quinonylmethyl, indolylmethyl, furylmethyl, thienylmethyl, and pyrolylmethyl which may be substituted with an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 3 carbon atoms or a halogen atom; an aryl group which may be substituted with an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 3 carbon atoms or a halogen atom; a (C_1 to C_3 alkoxy) carbonyl group; a carbamoyl group; a N—(C_1 to C_4 alkyl) carbamoyl group; and a N,N-di(C_1 to C_4 alkyl) carbamoyl group (wherein alkyl may be the same or different), and R^1 and R^2 may be the same or different;

Ar^1 and Ar^2 are groups independently selected from the group consisting of an aryl group which may be substituted with an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 3 carbon atoms or a halogen atom; and Ar^1 and Ar^2 may be the same or different;

X^- is a halide anion; and

Y and Z are groups independently selected from the group consisting of a hydrogen atom; a halogen atom; an alkyl group having 1 to 4 carbon atoms; and an alkoxy group having 1 to 3 carbon atoms, and Y and Z may be the same or different, or may form a single bond.

US 6,340,754 B1

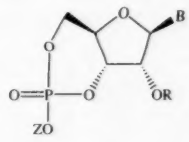
PHOSPHORUS CONTAINING CYCLIC NUCLEOTIDES

Oreste Ghisalba, Reinach; Guy Joel Christian Marais, Olten, and Pierre Martin, Rheinfelden, all of Switzerland, assignors to Novartis AG, Basel, Switzerland

Division of application No. 09/167,191, filed on Oct. 6, 1998, now Pat. No. 6,147,211. This application Sep. 18, 2000, Appl. No. 664,596.
Int. Cl. C07F *9/06;* **A61P** *43/00*
U.S. Cl. 544—244 **4 Claims**

1. A compound of formula (I)

Formula (I)



wherein:

B is adenine, guanine or hypoxanthine;

Z is hydrogen or a negative charge; and

R is $-[CH_2CH(R^1)—O]_n—R^2$ or $—CH_2CH_2X$, in which wherein

R^1 is hydrogen or (C_1–C_6) alkyl,

R^2 is hydrogen or (C_1–C_6) alkyl,

n is a number from 1 to 6,

X is OH, F, NR^3R^4, and

R^3 and R^4 are independently from each other hydrogen or (C_1–C_6) alkyl;

or a salt thereof when Z is a negative charge.

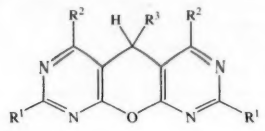
US 6,340,755 B1

5H-PYRANO[2,3-D: 6,5-D']DIPYRIMIDINE DERIVATIVES HAVING AN ANTIBACTERIAL, ANTIVIRAL AND IMMUNO-MODULATING ACTIVITY

Rimma Ilinichna Ashkinazi, Nevskii, Russian Federation, assignor to Natural Drug Sciences LLC, Ramsey, N.J.

PCT No. PCT/RU97/00371, § 371 Date Jul. 31, 2000, § 102(e) Date Jul. 31, 2000, PCT Pub. No. WO99/25718, PCT Pub. Date May 27, 1999
PCT Filed Nov. 19, 1997, Appl. No. 554,836
Int. Cl. C07D 491/052; A61P 31/04;31/22
U.S. Cl. 544—251 10 Claims

1. A compound having the formula:



where

R^1 is selected from the group consisting of hydroxy group, mercapto group, and halogen;

R^2 is selected from the group consisting of hydroxy group, alkoxy group, and halogen; and

R^3 selected from the group consisting of hydrogen and aryl, optionally substituted by halogen or nitro.

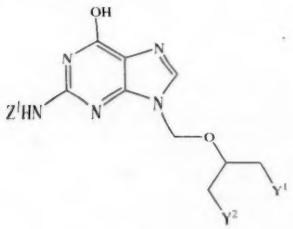
US 6,340,756 B1

PROCESS FOR PREPARING A 2-(2-AMINO-1, 6-DIHYDRO-6-OXO-PURIN-9-YL)METHOXY-1,3-PROPANEDIOL DERIVATIVE

Charles A. Dvorak; Douglas L. Wren, both of Palo Alto; Lawrence E. Fisher, Mountain View; Steven D. Axt, San Jose; Eric R. Humphreys, San Bruno; Humberto B. Arzeno, Cupertino; Colin C. Beard, Palo Alto, all of Calif.; Sam Linh Nguyen, Denver, Colo.; Yeun-Kwei Han, Louisville, Colo.; Christopher R. Roberts, Berthoud, Colo.; Jan P. Lund, Boulder, Colo., and Paul R. Fatheree, San Francisco, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of application No. 09/127,380, filed on Jul. 31, 1998, now Pat. No. 6,040,446, which is a continuation-in-part of application No. 08/779,540, filed on Jan. 8, 1997, now abandoned, which is a continuation-in-part of application No. 08/592,079, filed on Jan. 26, 1996, now abandoned. This application Feb. 3, 2000, Appl. No. 497,319.
Int. Cl. C07D 473/18
U.S. Cl. 544—276 3 Claims

1. A compound of Formula (IV)



wherein Z^1 is acyl of the formula R—C(O)—, wherein R is alkyl of 1–6 carbon atoms, Y^1 is halo or acyloxy, wherein acyl is as defined above; and Y^2 is aralkyloxy.

US 6,340,757 B1

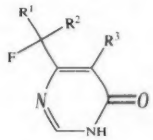
6-(1-FLUOROALKYL)-4-PYRIMIDONES AND PROCESSES FOR PRODUCING THE SAME

Hiroshi Yoshida; Kiyoshi Ohmori; Kensaku Fuse; Kazuhiro Morita; Yoshitaka Onduka, and Naoyuki Yokota, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

PCT No. PCT/JP99/01009, § 371 Date Aug. 3, 2000, § 102(e) Date Aug. 3, 2000, PCT Pub. No. WO99/44997, PCT Pub. Date Sep. 10, 1999
PCT Filed Mar. 3, 1999, Appl. No. 623,249
Claims priority, application Japan, Mar. 6, 1998, 10-055174; May 25, 1998, 10-142662
Int. Cl. C07D 239/02; A01N 43/60
U.S. Cl. 544—319 12 Claims

1. A 6-(1-fluoroalkyl)-4-pyrimidone represented by the following formula:

(1)



wherein R^1 represents an alkyl group; R^2 represents a hydrogen atom or an alkyl group; and R^3 represents a hydrogen atom, an alkyl group or a chlorine atom.

US 6,340,758 B1

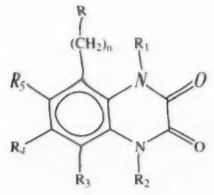
CONFORMATIONALLY SEMI-CONSTRAINED QUINOXALINE 2,3-DIONES AS NEUROPROTECTIVE AGENTS

Brian Edward Kornberg; Sham Shridhar Nikam, and Michael Francis Rafferty, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of application No. 09/025,295, filed on Feb. 13, 1998, now abandoned, Provisional application No. 60/046,626, filed on May 16, 1997. This application Nov. 25, 1998, Appl. No. 199,627.
Int. Cl. C07D 241/38;243/08; A61K 31/498; A61P 25/28
U.S. Cl. 544—337 2 Claims

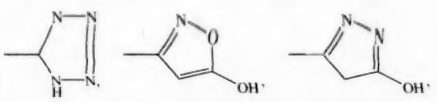
1. A compound of formula I:

I



wherein

R is a nitrogen heterocyclic ring selected from any one of the following rings



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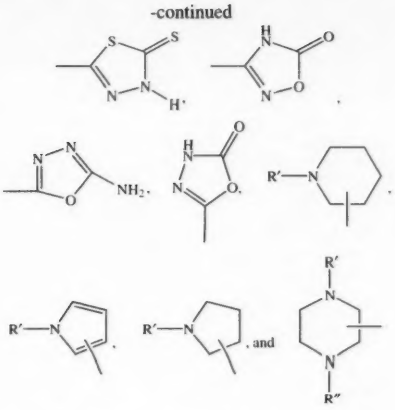


optionally substituted by one or more substituents selected from:

alkyl of from 1 to 4 carbon atoms,

hydroxyl,

alkoxy of from 1 to 4 carbon atoms,

—CF_3,

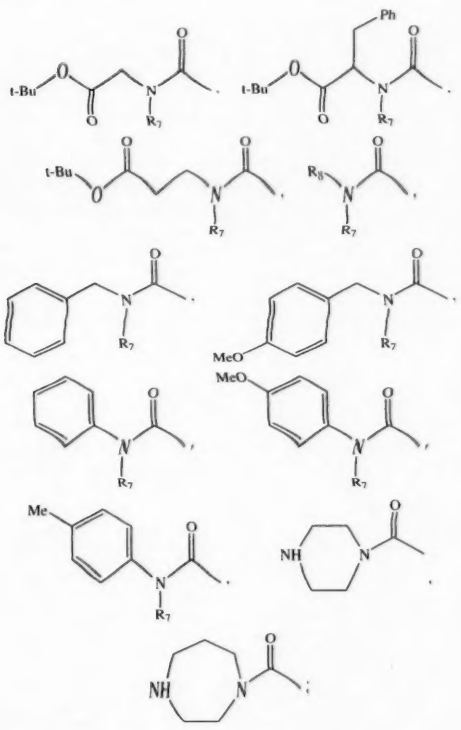
—CN,

—amino,

—C(O)R_{11}, or

—$(CH_2)_n$-aryl of from 6 to 12 carbon atoms;

or R is



and wherein R_1 is H or alkyl of from 1 to 4 carbon atoms;

R_2 is hydrogen;

R_3 is hydrogen;

R_4 is each independently H, alkyl of from 1 to 4 carbon atoms, cycloalkyl of from 5 to 7 carbon atoms, alkenyl of from 2 to 6 carbon atoms, halogen, haloalkyl of from 1 to 6 carbon atoms, nitro, cyano, SO_2CF_3, $CH_2SO_2R_7$,$(CH_2)_mCO_2R_7$, $(CH_2)_mCONR_7R_8$, $(CH_2)_mSO_2NR_8R_9$, or $NHCOR_7$;

R_5 is H or alkyl of from 1 to 4 carbon atoms;

R_7, R_8, R_9, and $R_{10}$are each independently selected from hydrogen, alkyl of from 1 to 4 carbon atoms, cycloalkyl of from 5 to 7 carbon atoms, haloalkyl of from 1 to 4 carbon atoms, or —$(CH_2)_mR_{11}$;

R_{11} is alkyl or alkoxy of from 1 to 4 carbon atoms, hydroxy, or amino;

m is an integer of from 0 to 4;

n is an integer of from 0 to 4;

R' and R" are independently H, alkyl of from 1–4 carbon atoms, cycloalkyl of from 5 to 6 carbon atoms, or heterocycloalkyl of from 5–7 members with up to 4 heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur;

or a pharmaceutically acceptable salt thereof.

US 6,340,759 B1

FUSED PYRIDINE DERIVATIVES

Kohshi Ueno; Atsushi Sasaki; Koki Kawano; Tadashi Okabe; *Noritaka Kitazawa; Keiko Takahashi; Noboru Yamamoto;* Yuichi Suzuki; Manabu Matsunaga, and Atsuhiko Kubota, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

PCT No. PCT/JP98/04465, § 371 Date Mar. 31, 2000, § 102(e) Date Mar. 31, 2000, PCT Pub. No. WO99/18077, PCT Pub. Date Apr. 15, 1999

PCT Filed Oct. 2, 1998, Appl. No. 509,778

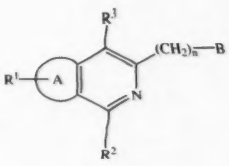
Claims priority, application Japan, Oct. 2, 1997, 9-284290

Int. Cl. C07D *241/02;409/00;495/02;513/02;* **A61K** *31/4743*

U.S. Cl. 544—358 **12 Claims**

1. A condensed pyridine compound (Rerepresented by the following formula, its pharmaceutically acceptable salt or hydrates thereof.

(I)

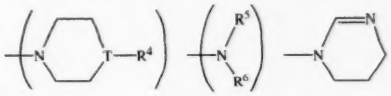


wherein,

ring A represents thiophene ring or furan ring;

R^1 represents hydrogen atom, halogen atom, a lower alkyl group or a lower alkoxyl group;

R^2 represents 4-morpholinyl group, 1-imidazolyl group, 1-lower alkyl homopiperazin-4-yl group or any one selected from the groups represented by the following formulae:



(wherein, T represents nitrogen atom or methine group;

R^3 represents hydrogen atom, halogen atom, a lower alkyl group or a lower alkoxyl group;

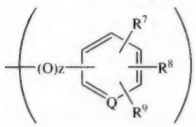
R^4 represents hydrogen atom, a lower alkyl group, a hydroxy lower alkyl group, a halogenated lower alkyl group, a lower cycloalkyl group, an aryl group, an aralkyl group, 1-piperidyl

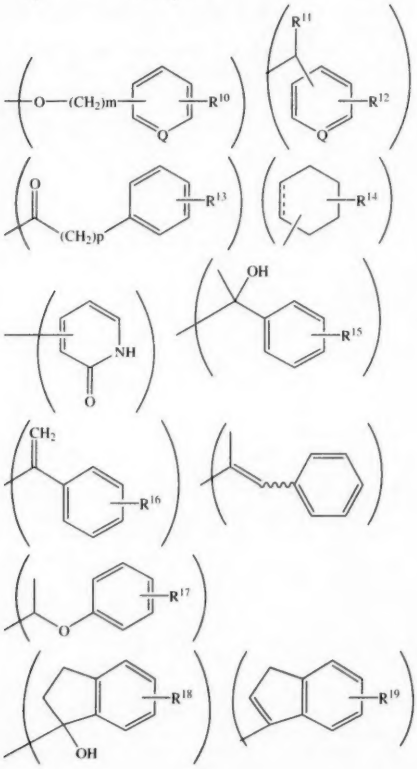
group, an alkenyl group, a cyano lower alkyl group, a carbamoyl lower alkyl group, a lower acyl group, an aromatic acyl group, a lower alkoxyl carbonyl group, an aryloxycarbonyl group or an aralkyloxycarbonyl group;

R^5 and R^6 are the same as or different from each other and each represents hydrogen atom, a lower alkyl group, a di lower alkyl aminoalkyl group, an optionally substituted heteroaryl lower alkyl group);

n represents 0 or an integer of 1 to 6; and

B represents an optionally substituted aryl group, an optionally substituted heteroaryl group, an optionally substituted aralkyloxy group, an aryl(hydroxy)alkyl group, an aromatic acyl amino group, an arylsulfonylamino group, a lower alkoxyl arylsulfonylamino group, a hydroxy lower alkoxyl styryl group, a lower alkoxyl aryloxy group, 4-phenylpiperidin-1-yl group, 4-pyridylpiperidin-1-yl group, an optionally substituted arylalkenyl group, an optionally substituted arylalkynyl group, an optionally substituted heteroarylalkenyl group, an optionally substituted heteroarylalkynyl group, an aromatic acyl alkynyl group, an optionally N-substituted amino lower alkyl group, an optionally substituted arylamino group, an optionally substituted aralkylamino group or any one selected from the groups represented by the following formulae:





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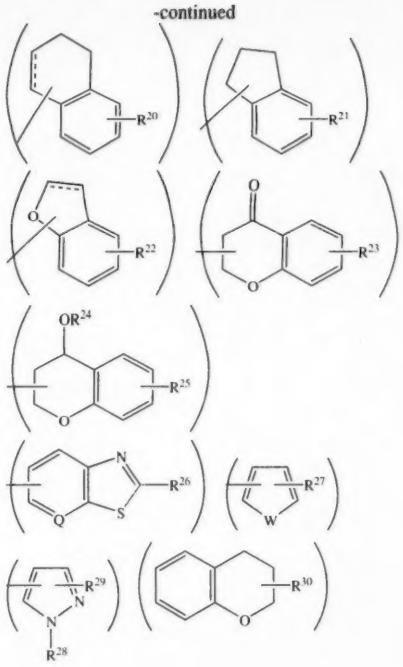


(wherein z represents 0 or 1;

Q represents nitrogen atom or methine group;

R^7, R^8 and R^9 are the same as or different from each other and each represents hydrogen atom, halogen atom, hydroxyl group, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, a lower alkoxyl group, a lower thioalkoxyl group, a hydroxy lower thioalkoxyl group, an arylthio group, a heteroarylthio group, a heteroaryl(hydroxy)alkyl group, a halogenated lower alkyl group, a hydroxy lower alkyl group, a dihydroxy lower alkyl group, a halogenated (hydroxy) lower alkyl group, a hydroxyalkenyl group, a hydroxyalkynyl group, a hydroxy lower cycloalkenyl group, a lower alkoxy(hydroxy-)alkyl group, a lower alkoxy(hydroxy)alkoxy group, a lower alkoxyalkyl group, a lower alkoxyalkoxy group, a lower thioalkoxyalkoxy group, a lower alkylsulfonylalkoxy group, a hydroxy lower alkoxy group, a dihydroxy lower alkoxy group, a hydroxy lower alkylalkoxy group, a hydroxyimino lower alkyl group, a lower cycloalkyl (hydroxy) alkyl group, an aralkyl group, a hydroxyaralkyl group, cyano group, a cyano lower alkyl group, amide group, an N-lower alkylamide group, an N-lower cycloalkylamide group, an N,N-di lower alkylamide group, an N-hydroxy lower alkylamide group, an N-hydroxy lower alkyl-N-lower alkylamide group, an N-arylamide group, cyclic aminocarbonyl group, carbamoyl group, an N-lower alkyl carbamoyl group, an N,N-di lower alkyl carbamoyl group, aminosulfonyl group, cyclic aminosulfonyl group, an N-lower alkylaminosulfonyl group, an N-lower cycloalkylaminosulfonyl group, an N,N-di lower alkylaminosulfonyl group, an N-hydroxy lower alkylaminosulfonyl group, an N-lower alkoxyalkylaminosulfonyl group, an N-halogenated lower alkylsulfonyl group, pyrrolidinylsulfonyl group, a lower alkylsulfonylaminoalkyl group, an N-lower alkylaminosulfonylalkyl group, an N,N-di lower alkylaminosulfonylalkyl group, a lower acyl group, a lower acylalkyl group, a lower cycloalkyl(hydroxy)methyl group,

tetrahydropyranyl group, hydroxytetrahydropyranyl group, a hydroxy lower alkyltetrahydropyranyl group, a lower acylaminoalkyl group, (thiazol-2-yl)hydroxymethyl group, di(thiazol-2-yl)hydroxymethyl group, a lower alkylsulfonyl group, a lower alkoxyalkylsulfonyl group, a hydroxy lower alkylsulfonyl group, a lower alkylsulfonylalkyl group, an N-lower alkylamidealkyl group, an aryl group, an aralkyl group, a heteroaryl group, a heteroaryl lower alkyl group, a heteroaryl lower alkoxy group, a heteroarylsulfonyl group, 4-morpholinylsulfonyl group, 4-oxythiomorpholinylsulfonyl group, 4-dioxythiomorpholinylsulfonyl group, 4-morpholinylsulfonyl group, a hydroxy lower cycloalkyl group, a hydroxy lower cycloalkyloxy group, a hydroxycycloalkenyl group, a halogenated hydroxy lower alkyl group, 4-hydroxypiperidyl group, a 4-lower alkoxypiperidyl group, an ω,ω-lower alkylenedioxyalkyl group, an ω,ω-lower alkylenedioxyalkoxy group, a lower cycloalkylhydroxymethyl group, an aryloxy group, an arylaminosulfonyl group, amino group, a lower alkylamino group, a di lower alkylamino group, a hydroxy lower alkylamino group, a lower acylamino group, a hydroxy lower acylamino group, a lower alkylsulfonylamino group, a pyridyl lower alkoxy group, a lower alkylpyridylalkoxy group, a lower alkoxyhydroxyalkoxy group, a lower thioalkoxyalkoxy group, a lower alkylsulfonylalkoxy group, an N-lower aikylcarbamoyl group, an N,N-di lower alkylcarbamoyl group, an N-hydroxy lower alkylcarbamoyl group, an N-hydroxy lower alkyl-N-lower alkylcarbamoyl group, a halogenated lower alkoxy group, a cyano lower alkoxy group, a hydroxy lower cycloalkoxy group, trifluoromethyl group, trifluoromethoxy group, an amino lower alkoxy group, an N-lower alkyl aminoalkoxy group, an N,N-di lower alkylaminoalkoxy group, a lower acylalkoxy group, a lower acylaminoalkoxy group, a (1,3-dioxolanyl) lower alkyl group, a (1,3-dioxolanyl) lower alkoxyl group, an amide lower alkoxyl group, a 4-(hydroxyalkyl)tetrahydropyran-4-yl group, 2,3-dihydrobenzofuranyl group, a 2-hydroxy-2-alkyl-2,3-dihydrobenzofuranyl group, indanonyl group, hydroxyindanyl group, an imidazolyl lower alkoxyl group, succinimide group or 2-oxazolidon-3-yl group;

furthermore, R^7 represents hydrogen atom, while R^8 and R^9 form cyclopentanone ring, hydroxycyclopentane ring, a hydroxyalkylcyclopentane ring, cyclohexanone ring, hydroxycyclohexane ring, a hydroxyalkylcyclohexane ring, 2-hydroxymethyl-2-methylcyclopentanone ring, 1,2-ethylenedioxy ring or methylenedioxy ring;

m or p represents 0 or an integer of 1 to 6;

R^{10}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{20}, R^{21}, R^{22}, R^{23}, R^{25}, R^{27}, and R^{29} independently represent hydrogen atom, halogen atom, hydroxyl group, a lower alkyl group, a lower alkoxy group, a hydroxy lower alkyl group, a hydroxy lower alkoxy group or tetrahydropyranyl group;

R^{11} represents hydrogen atom, halogen atom, hydroxy group, a lower alkyl group or a lower alkoxy group;

R^{24} represents hydrogen atom or a lower alkyl group;

R^{26} represents hydrogen atom or a hydroxy lower alkyl group;

R^{28} represents hydrogen atom or a lower alkyl group;

R^{30} represents hydrogen atom, a lower alkyl group, a lower alkoxy group, a hydroxy lower alkyl group or a hydroxy lower alkoxy group;

W represents sulfur atom or oxygen atom;

the bond represented by the following formula:

represents a single or double bond; and

the bond represented by the following formula: ~~~ represents trans or cis bond.).

US 6,340,760 B1

PROCESS FOR THE PREPARATION OF (S)-N-TERT-BUTYL-1,2,3,4-TETRAHYDROISOQUINOLINE-3-CARBOXYAMIDE

Pietro Bellani, and Marco Frigerio, both of Milan, Italy, assignors to Clariant LSM Italia S.p.A, Origgio, Italy

Continuation of application No. PCT/EP99/04266, filed on Jun. 17, 1999. This application Jan. 6, 2000, Appl. No. 478,690.

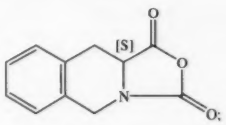
Claims priority, application Italy, Jun. 26, 1998, MI98A1478

Int. Cl. C07D *491/048;491/04*

U.S. Cl. 546—89 **16 Claims**

1. A process for the production of (S)-N-tert-butyl-1,2,3,4 -tetrahydroisoquinoline-3-carboxyamide, comprising:

a) reacting (3S)-1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid with triphosgene in dioxane to form an N-carboxyanhydride of the following formula



; and

b) reacting the N-carboxyanhydride with tert-butylamine in toluene to produce the (S)-N-tert-butyl-1,2,3,4-tetrahydroisoquinoline-3 -carboxyamide.

US 6,340,761 B1

INTERMEDIATES USEFUL FOR THE PREPARATION OF ANTIHISTAMINIC PIPERIDINE DERIVATIVES

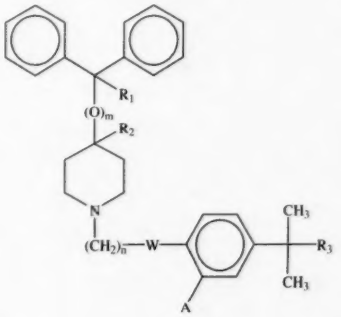
Richard C. Krauss; Robert M. Strom, both of Midland; Carey L. Scortichini; William J. Kruper, both of Sanford; Richard A. Wolf; Weishi W. Wu, both of Midland, all of Mich.; Albert A. Carr; David A. Hay, both of Cincinnati, Ohio; Duane E. Rudisill, West Chester, Ohio, and Gianbattista Panzone, Cornaredo, Italy, assignors to Merrell Pharmaceuticals Inc., Bridgewater, N.J.

Division of application No. 08/275,685, filed on Jul. 14, 1994, now Pat. No. 6,242,606, which is a continuation-in-part of application No. 08/237,466, filed on May 11, 1994, now abandoned, which is a continuation-in-part of application No. 08/144,084, filed on Oct. 27, 1993, now abandoned, which is a continuation-in-part of application No. 08/082,693, filed on Jun. 25, 1993, now abandoned. This application Nov. 29, 2000, Appl. No. 725,298.

Int. Cl. C07D *211/14*

U.S. Cl. 546—239 **3 Claims**

1. A process for preparing a compound of the formula



wherein

W represents —C(=O)— or —CH(OH)—;

R_1 represents hydrogen or hydroxy;

R_2 represents hydrogen; or

R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2;

n is an integer of from 1 to 5;

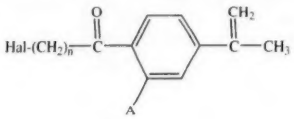
m is an integer 0 or 1;

R_3 is —COOH or —COOalkyl wherein the alkyl moiety has from 1 to 6 carbon atoms and is straight or branched;

each of A is hydrogen or hydroxy; and

pharmaceutically acceptable salts and individual optical isomers thereof, with the proviso that where R_1 and R_2 are taken together to form a second bond between the carbon atoms bearing R_1 and R_2 or where R_1 represented hydroxy, m is an integer 0,

comprising using an intermediate compound of the formula



wherein

Hal is Cl, Br or I;

n is an integer of from 1 to 5; and

A is a hydrogen or hydroxy.

US 6,340,762 B2

METHOD FOR OPTICAL RESOLUTION OF PIPERIDINE CARBOXYLIC ACID DERIVATIVE

Isao Hashiba; Masami Kozawa, both of Chiba, and Kiyotomo Seto, Tokyo, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Mar. 12, 2001, Appl. No. 802,916

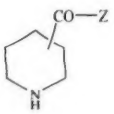
Claims priority, application Japan, Apr. 13, 2000, 12-112616

Int. Cl. C07D *211/12*; **C07C** *51/00*

U.S. Cl. 546—245 **3 Claims**

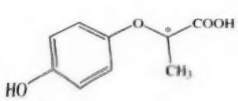
1. A method for producing an optically active piperidine carboxylic acid derivative, which comprises subjecting a piperidine carboxylic acid derivative of the formula (1):

(1)



wherein Z is a protecting group for the carboxyl group, to optical resolution by means of an optical resolution agent of the formula (2):

(2)



wherein symbol * indicates that the designated carbon atom is asymmetric.

US 6,340,763 B1

PRODUCING Z-ISOMER OF HYDROGEN BROMIDE SALT OF 2-AMINOTHIAZOLE DERIVATIVE

Isao Kurimoto; Norihiko Hirata, both of Suita; Akihiko Nakamura, and Yuichiro Aratake, both of Takatsuki, all of Japan, assignors to Sumitomo Chemical Co., Ltd., and Shionogi & Co., Ltd., both of Osaka, Japan

Filed Nov. 10, 1999, Appl. No. 437,599

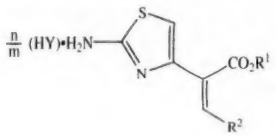
Claims priority, application Japan, Nov. 12, 1998, 10-322050; Feb. 4, 1999, 11-027198; Jun. 29, 1999, 11-183671

Int. Cl. C07D *277/40*

U.S. Cl. 548—194 **5 Claims**

1. A process for producing crystals of an acid salt of a (Z)-2-aminothiazole compound of formula (I)

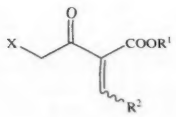
(I)



wherein R^1 and R^2 *independently represent* an alkyl group having 1 to 5 carbon atoms, Y represents a halogen atom, —OSO_3H or —$OPO(OH)_2$, m indicates the valence number of an inorganic acid of the formula (III) and n indicates an integer of 1 or 2, which process comprises:

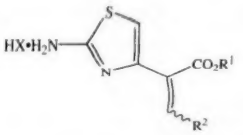
reacting thiourea and a halogenated compound of formula (VI)

(VI)



wherein R^1, R^2 and the wavy line have the same meaning as defined in claim **1**, and X represents a bromine atom or an iodine atom, to form a Z-isomer rich acid salt of a 2-aminothiazole compound of formula (II)

(II)



wherein R^1 *and* R^2 *independently represent an alkyl group* having 1 to 5 carbon atoms, X represents a bromine atom or an iodine atom and the wavy line means that this compound is a mixture of the E- and Z-isomers, reacting the salt of formula (II) with an inorganic acid of formula (III)

HY (III)

wherein Y represents a halogen atom, —OSO_3H, or —$OPO(OH)_2$ in the presence of a solvent, and

crystallizing from solution the (Z)-2-aminothiazole compound of formula (I).

US 6,340,764 B1

REFERENCE COMPOUND FOR USE IN THE ANALYSIS OF LEVOSIMENDAN BATCHES

Reijo Bäckström, Helsinki; Tuula Heinonen, Espoo, and Tuula Hauta-Aho, Vantaa, all of Finland, assignors to Orion Corporation, Espoo, Finland

PCT No. PCT/FI99/00539, § 371 Date Feb. 20, 2001, § 102(e) Date Feb. 20, 2001, PCT Pub. No. WO99/65888, PCT Pub. Date Dec. 23, 1999

PCT Filed Jun. 18, 1999, Appl. No. 719,806

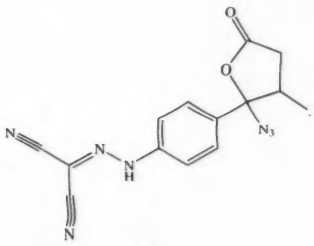
Claims priority, application Finland, Jun. 18, 1998, 981428

Int. Cl. C07D *307/32;* **G01N** *30/04;* **C07C** *247/00*

U.S. Cl. 549—321 **12 Claims**

1. A compound of formula *I*

(I)



US 6,340,765 B1

CHROMENE COMPOUND

Junji Momoda, and Yuichiro Kawabata, both of Tokuyama, Japan, assignors to Tokuyama Corporation, Yamaguchi-Ken, Japan

Filed May 18, 2000, Appl. No. 572,896

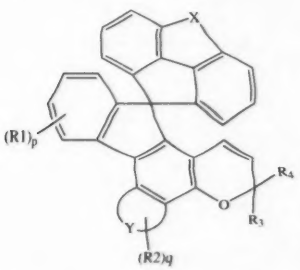
Claims priority, application Japan, May 20, 1999, 11-140836; Oct. 26, 1999, 11-303967

Int. Cl. C07D *311/96*

U.S. Cl. 549—330 **26 Claims**

1. A chromene compound represented by the formula (1),

(1)

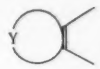


wherein,

R^1 is an alkyl group, an alkoxy group, an aralkoxy group, an amino group, a substituted amino group, a cyano group, a substituted or unsubstituted aryl group, a halogen atom, an aralkyl group, a monovalent substituted or unsubstituted heterocyclic group having a nitrogen atom as a hetero atom and *bonded to the indene ring through the nitrogen atom, or a* monovalent condensed heterocyclic group in which said heterocyclic group is condensed with an aromatic hydrocarbon ring or an aromatic heterocyclic ring, and p is an integer of from 0 to 3;

a divalent group represented by the following formula (2),

(2)

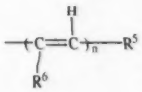


is an aromatic hydrocarbon group or an unsaturated heterocyclic ring;

R^2 is an alkyl group, an alkoxy group, an aralkoxy group, an amino group, a substituted amino group, a cyano group, a substituted or unsubstituted aryl group, a halogen atom, an aralkyl group, a monovalent substituted or unsubstituted heterocyclic group having a nitrogen atom as a hetero atom and is bonded to the ring of the group represented by the above formula (2) through the nitrogen atom, or a monovalent condensed heterocyclic group in which said heterocyclic group is condensed with an aromatic hydrocarbon ring or an aromatic heterocyclic ring, and q is an integer of from 0 to 3;

R^3 and R^4, independently from each other, represent a group of formula (3), formula (4), substituted or unsubstituted aryl group, or substituted or unsubstituted heteroaryl group;

(3)



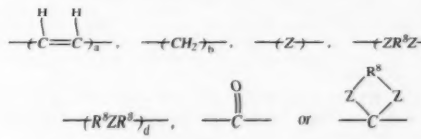
wherein R^5 is a substituted or unsubstituted aryl group, or a substituted or unsubstituted heteroaryl group, R^6 is a hydrogen atom, an alkyl group or a halogen atom, and *n* is an integer of from 1 to 3;

(4)

wherein R^7 is a substituted or unsubstituted aryl group, or a substituted or unsubstituted heteroaryl group, and m is an integer of from 1 to 3; or

R^3 and R^4 are groups which together form an aliphatic hydrocarbon ring or an aromatic hydrocarbon ring; and

X is represented by one of the following formula,



wherein Z is an oxygen atom or a sulfur atom, R^8 is an alkylene group with 1 to 6 carbon atoms, and a, b, c and d are, independently of each other, integers of from *1* to 4.

US 6,340,766 B1

SUBSTITUTED NAPTHOPYRANS

Jibin Lin, Fremont, Calif., assignor to Transition Optical, Inc., Pinellas Park, Fla.

Provisional application No. 60/175,640, filed on Jan. 12, 2000. This application Dec. 15, 2000, Appl. No. 738,175.

Int. Cl. C07D *311/92;* **G02B** 5/23; **C08K** 5/15; **G02C** 7/10; **G02F** *1/03*

U.S. Cl. 549—389 **22 Claims**

1. A naphthopyran compound of 2H-naphtho[1,2-b] pyran structure, characterized by having in the 5 position, a group, $C(O)OR_1$, wherein R_1 is (C_3–C_{12}) cycloalkyl, mono(C_1–C_6)alkyl substituted

C_3–C_{12} cycloalkyl, mono(C_1– C_6)alkoxy substituted C_3–C_{12} cycloalkyl, halo(C_3–C_{12})cycloalkyl, C_4–C_{12} bicyloalkyl or C_7–C_{12} tricycloalkyl, said halo being bromo, chloro, fluoro or iodo.

US 6,340,767 B1

PROCESSES FOR THE PREPARATION OF 5-HYDROXY-3-OXOPENTANOIC ACID DERIVATIVES

Akira Nishiyama, and Kenji Inoue, both of Kakogawa, Japan, assignors to Kaneka Corporation, Osaka, Japan

PCT No. PCT/JP00/03574, § 371 Date Apr. 5, 2001, § 102(e) Date Apr. 5, 2001, PCT Pub. No. WO00/75099, PCT Pub. Date Dec. 14, 2000

PCT Filed Jun. 2, 2000, Appl. No. 762,215

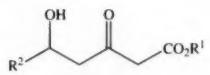
Claims priority, application Japan, Jun. 4, 1999, 11-158033; Feb. 1, 2000, 2000-023084

Int. Cl. C07C *51/00*

U.S. Cl. 554—115 **20 Claims**

1. A process for producing a 5-hydroxy-3-oxopentanoic acid derivative of the following formula (IV):

(IV)



wherein R^1 represents any of an alkyl group of 1 to 12 carbon atoms, an aryl group of 6 to 12 carbon atoms and an aralkyl group of 7 to 12 carbon atoms; and R^2 represents any of hydrogen, an alkyl group of 1 to 12 carbon atoms which may have a substituent, an alkenyl group of 2 to 12 carbon atoms which may have a substituent, an aryl group of 6 to 12 carbon atoms which may have a substituent, an aralkyl group of 7 to 12 carbon atoms which may have a substituent, a cyano group, a carboxyl group and an alkoxycarbonyl group,

which comprises permitting a lithium amide of the following formula (III):

(III)

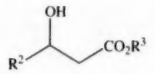
wherein R^4 and R^5 may be the same or different and each represents any of an alkyl group of 1 to 12 carbon atoms, an aryl group of 6 to 12 carbon atoms, an aralkyl group of 7 to 12 carbon atoms and a silyl group,

to act upon a mixture of an acetic acid ester of the following formula (I) and a 3-hydroxypropionic acid derivative of the following formula (II) at a temperature not below −20° C.:

$$CH_3CO_2R^1 \quad (I)$$

wherein R^1 represents any of an alkyl group of 1 to 12 carbon atoms, an aryl group of 6 to 12 carbon atoms and an aralkyl group of 7 to 12 carbon atoms:

(II)



wherein R^2 represents any of hydrogen, an alkyl group of 1 to 12 carbon atoms which may have a substituent, an alkenyl group of 2 to 12 carbon atoms which may have a substituent, an aryl group of 6 to 12 carbon atoms which may have a substituent, an aralkyl group of 7 to 12 carbon atoms which may have a substituent, a cyano group, a carboxyl group and an alkoxycarbonyl group; R^3 represents any of an alkyl group of 1 to 12 carbon atoms, an aryl group of 6 to 12 carbon atoms and an aralkyl group of 7 to 12 carbon atoms; and R^2 and R^3 may be joined to each other to form a ring.

US 6,340,768 B1

MOCVD PRECURSORS BASED ON ORGANOMETALLOID LIGANDS

John T. Welch; Kulbinder Kumar Banger; Seiichiro Higashiya, and Silvana C. Ngo, all of Albany, N.Y., assignors to Research Foundation of State University of New York, Albany, N.Y.

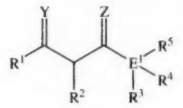
Filed Dec. 4, 2000, Appl. No. 728,998

Int. Cl. C07F *7/02;1/08;1/10;15/06;* **C23C** *16/00*

U.S. Cl. 556—12 **27 Claims**

1. A compound of formula I:

(I)



wherein

R^1 is alkyl, substituted alkyl, haloalkyl, cycloalkyl, aryl, substituted aryl, heteroaryl, arylalkyl, alkoxy, acyl, alkyl carboxylate, aryl carboxylate, alkenyl, alkynyl, or $E^2(R^6)(R^7)(R^8)$;

R^2 is H, halogen, nitro, or haloalkyl;

E^1 and E^2 are independently Si, Ge, Sn, or Pb;

R^3, R^4, R^5, R^6, R^7, and R^8 are independently alkyl or haloalkyl, and at least one of R^3, R^4, R^5, R^6, R^7, and R^8 is haloalkyl;

Y and Z are independently O, S or NR^9; and

R^9 is alkyl, substituted alkyl, cycloalkyl, aryl, substituted aryl, heteroaryl, arylalkyl, alkoxy, alkenyl, or alkynyl.

13. A metal-ligand complex of formula II

$$ML_n{\cdot}pD \quad (II)$$

wherein

M is a metal chosen from the group consisting of: Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, Sc, Y, La, Ce, Ti, Zr, Hf, Pr, V, Nb, Ta, Nd, Cr, Mo, W, Mn, Re, Sm, Fe, Ru, Eu, Os, Co, Rh, Ir, Gd, Ni, Pd, Pt, Tb, Cu, Ag, Au, Dy, Ho, Al, Ga, In, Tl, Er, Ge, Sn, Pb, Tm, Sb, Bi, Yb, Lu, Th, and U or a mixture thereof;

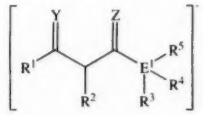
D is a neutral coordinating ligand;

n is equal to the valence of M;

p is zero or an integer from 1 to 6; and

L is a ligand of formula III

(III)



wherein

R^1 is alkyl, substituted alkyl, haloalkyl, cycloalkyl, aryl, substituted aryl, heteroaryl, arylalkyl, alkoxy, acyl, alkyl carboxylate, aryl carboxylate, alkenyl, alkynyl, or $E^2(R^6)(R^7)(R^8)$;

R^2 is H, halogen, nitro, or haloalkyl;

E^1 and E^2 are independently Si, Ge, Sn, or Pb;

R^3, R^4, R^5, R^6, R^7, and R^8 are independently chosen from alkyl and haloalkyl, and at least one of R^3, R^4, R^5, R^6, R^7, and R^8 is haloalkyl;

Y and Z are independently O, S or NR^9; and

R^9 is alkyl, substituted alkyl, cycloalkyl, aryl, substituted aryl, heteroaryl, arylalkyl, alkoxy, alkenyl, or alkynyl.

US 6,340,769 B1

METHOD OF FABRICATING IRIDIUM-BASED MATERIALS AND STRUCTURES ON SUBSTRATES, AND IRIDIUM SOURCE REAGENTS THEREFOR

Thomas H. Baum, New Fairfield, and Chongying Xu, New Milford, both of Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.

Continuation-in-part of application No. 08/966,797, filed on Nov. 10, 1997, now Pat. No. 6,018,065. This application Dec. 3, 1999, Appl. No. 453,995.

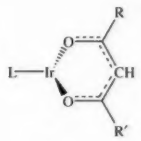
Int. Cl. C07F *15/00*

U.S. Cl. 556—136 **15 Claims**

1. A composition comprising an organic solvent solution of an Ir(I) reagent, wherein said Ir(I) reagent is selected from the group consisting of:

Lewis base stabilized Ir(I) β-diketonates of formula I:

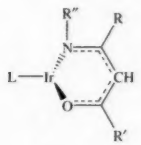
I



wherein R and R' may be alike or different and may be H, aryl, perfluoroaryl, C_1–C_6 alkyl, or C_1–C_6 perfluoroalkyl, and L is a coordinating Lewis base; and

Lewis base stabilized Ir(I) β-ketoiminates of formula II:

II



wherein R, R', and R" are the same or different, and are independently selected from the group consisting of H, aryl, perfluoroaryl, C_1–C_6 alkyl, or C_1–C_6 perfluoroalkyl, and L is a coordinating Lewis base selected from the group consisting of alkene, diene, cycloalkene, cyclodiene, cyclooctatetraene, alkyne, substituted alkyne (symmetrical or asymmetrical), amine, diamine, triamine, tetraamine, ether, tetrahydrofuran, glyme, diglyme, triglyme, tetraglyme, phosphine, carbonyl, dialkyl sulfide, vinyltrimethylsilane, and allyltrimethylsilane.

US 6,340,770 B1

PLATINUM (IV) COMPLEX USED AS ANTI-CANCER AGENT AND PREPARING METHOD THEREOF

Young-Ee Kwon; Kyu Ja Whang, and Won Kyu Kim, all of Seoul, Rep. of Korea, assignors to Sook Myung Women's University, and STC Nara Co., Ltd., both of Seoul, Rep. of Korea

Filed Dec. 29, 1999, Appl. No. 474,129

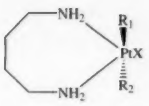
Claims priority, application Rep. of Korea, May 20, 1999, 99-16801

Int. Cl. C07F *15/00*; **A61K** *31/28*

U.S. Cl. 556—137 **15 Claims**

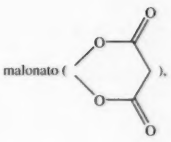
1. An anti-cancer compound represented by the following Chemical Formula 3,

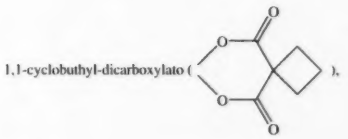
<Chemical Formula 3>

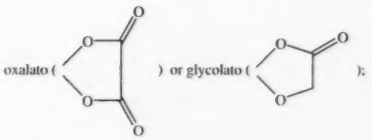


wherein,

X is Cl_2,



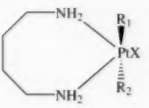




and R_1 and R_2 are independently —OH, —Cl, —$OCOCH_3$, —$OCOCF_3$, —$OCO(CH_2)_nCH_3$ or —$OCO(CH_2)_nCF_3$ (n is an integer of 1 to 4).

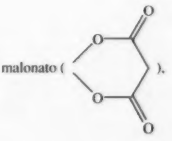
3. A pharmaceutical composition comprising the compound represented by the following Chemical Formula 3,

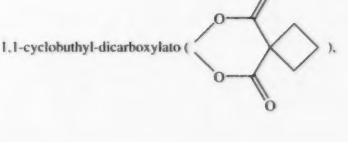
<Chemical Formula 3>



wherein,

X is Cl_2,





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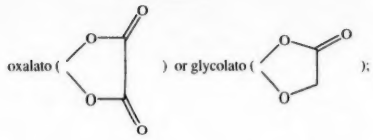


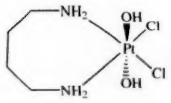
and R_1 and R_2 are independently —OH, —Cl, —$OCOCH_3$, —$OCOCF_3$, —$OCO(CH_2)_nCH_3$ or —$OCO(CH_2)_nCF_3$ (n is an integer of 1 to 4).

7. A method for synthesizing the compound represented by the following Formula 4, which comprises the steps of:

(a) preparing dichloro-1,4butanediamine Pt (II) complex; and

(b) adding 30% H_2O_2 to the dichloro-1,4butanediamine Pt (II) complex,

<Chemical Formula 4>



trans, cis-dihydroxo, dichloro-1,4-butanediamine Pt(IV) complex.

US 6,340,771 B1

"SWEET" MAO

Peter Phung Minh Hoang; Dusan Jeremic; Jason Roy Kearns; Iain McLaren Coulter, and Robert D. Donaldson, all of Calgary, Canada, assignors to Nova Chemicals (International) S. A., Switzerland

Filed Dec. 22, 1999, Appl. No. 470,569

Int. Cl. C07F *5/06;17/00;* **B01J** *31/00*

U.S. Cl. 556—171 **9 Claims**

1. A process comprising treating a complex aluminum compound of the formula $R^4{}_2AlO(R^4AlO)_mAlR^4{}_2$ wherein each R^4 is independently selected from the group consisting of C_{1-20} hydrocarbyl radicals and m is from 3 to 50, with one or more carbohydrates in a weight ratio of aluminum complex to carbohydrate from 1:100 to 100:1 at a temperature from 0° C. to 200° C. for a time of at least 5 minutes.

US 6,340,772 B2

PROCESS FOR PREPARING (HETERO) AROMATIC SUBSTITUTED BENZENE DERIVATIVES

Tetsuya Toya, Saitama-ken; Hidetoshi Shirakura, and Junichi Kon, both of Ibaraki-ken, all of Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan

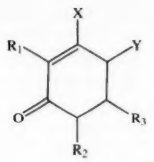
Division of application No. 09/517,151, filed on Feb. 22, 2000, now Pat. No. 6,271,418. This application Apr. 24, 2001, Appl. No. 841,313.

Int. Cl. C07C *211/00;209/00;* **C07D** *471/02*

U.S. Cl. 564—5 **16 Claims**

1. A cyclohexenone derivative represented by the formula (II):

(II)



wherein X-represents a phenyl group, a naphthyl group or a heteroaromatic group which are optionally substituted with (C1–C4)alkyl group(s), (C1–C4)alkoxy group(s), halogen atom(s) or nitro group(s); Y represents a (C1–C4)alkoxycarbonyl group, a cyano group, a nitro group or a (C1–C4)alkoxysulfonyl group; R1, R2 and R3 each independently represents a hydrogen atom, a (C1–C4)alkyl group, a (C1–C4)alkoxy group or a phenyl group which is optionally substituted with (C1–C4)alkyl group(s), (C1–C4)alkoxy group(s) or halogen atom(s).

US 6,340,773 B1

PREPARATION OF HALOGENATED PRIMARY AMINES

Mingbao Zhang, Morris County; Michael A. Kocur, Union County, and Mary Frances Martin, Bergen County, all of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Sep. 14, 1999, Appl. No. 396,686

Int. Cl. C07C *211/03;209/40*

U.S. Cl. 564—384 **26 Claims**

1. A method of preparing a halogenated amine comprising:

hydrogenating a halogenated oxime under substantially anhydrous conditions and in the presence of a catalyst comprising a non-palladium noble metal or a base metal under conditions sufficient to produce a halogenated primary amine.

US 6,340,774 B1

NON-STEROIDAL ESTROGEN-RECEPTOR ANTAGONISTS

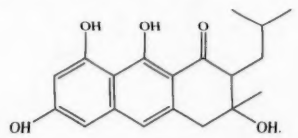
Chaitan Khosla, Palo Alto; Zhihao Hu, and Thomas Marti, both of Stanford, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Provisional application No. 60/243,458, filed on Oct. 25, 2000, Provisional application No. 60/179,305, filed on Jan. 31, 2000. This application Jan. 31, 2001, Appl. No. 773,816.

Int. Cl. C07C *49/115;49/215;49/796*

U.S. Cl. 568—326 **1 Claim**

1. An estrogen receptor antagonist given by the formula:



US 6,340,775 B1

METHOD FOR REDUCING A CARBONYL-CONTAINING COMPOUND

Roland Jacquot, Sainte Foy les Lyon, and Michel Spagnol, Lyons, both of France, assignors to Rhodia Chimie, Courbevoie Cedex, France

PCT No. PCT/FR98/00010, § 371 Date Oct. 22, 1999, § 102(e) Date Oct. 22, 1999, PCT Pub. No. WO98/30517, PCT Pub. Date Jul. 16, 1998

PCT Filed Jan. 6, 1998, Appl. No. 341,183

Claims priority, application France, Jan. 6, 1997, 97 00042

Int. Cl. C07C *49/403;29/20;35/08*

U.S. Cl. 568—376 **43 Claims**

1. A process for reduction of a carbonyl compound to the corresponding alcohol, by reaction of said carbonyl compound with an alcohol in the presence of a zeolite catalyst, comprising:

mixing, in any manner whatever, the carbonyl compound and the alcohol,

passing said mixture over a catalyst bed containing at least one zeolite,

subjecting the reaction mixture leaving the catalyst bed to recirculation through the catalyst bed, for a number of times sufficient to obtain the desired degree of conversion of the substrate.

US 6,340,776 B2

PROCESS FOR PRODUCING 1,1,1-TRIFLUOROACETONE

Yoshihiko Goto; Ryo Nadano; Takashi Sakaya, and Takayuki Nishimiya, all of Saitama, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Feb. 21, 2001, Appl. No. 789,001

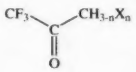
Claims priority, application Japan, Feb. 22, 2000, 12-043869; Oct. 10, 2000, 12-309649

Int. Cl. C07C *45/63*

U.S. Cl. 568—394 **15 Claims**

1. A process for producing 1,1,1-trifluoroacetone, comprising conducting a hydrogenolysis of a halogenated trifluoroacetone, which is represented by the general formula (1), by a hydrogen gas in the presence of a catalyst comprising a transition metal,

(1)



where X represents a chlorine, bromine or iodine, and n represents an integer from 1 to 3.

US 6,340,777 B1

METHOD FOR PURIFYING ACETONE

Valery Jurievich Aristovich; Yury Valerievich Aristovich, both of Sankt-Petersburg, Russian Federation; John William Fulmer, Mt. Vernon, Ind., and Andrey Jurievich Sokolov, Sankt-Petersburg, Russian Federation, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 25, 2000, Appl. No. 668,996

Claims priority, application Russian Federation, Oct. 22, 1999, 99121965

Int. Cl. C07C *45/78*

U.S. Cl. 568—411 **10 Claims**

1. A method for purifying acetone, comprising: distilling a crude acetone-phenol mixture by feeding the mixture to a first rectification column for separating low-boiling impurities; removing remaining constituents of the mixture from the bottom of the first column; and feeding the remaining constiuents to a second rectification column for separating high-boiling impurities wherein an alkaline agent and an oxidizing agent are both added to the remaining constituents in the second column or any point upstream, and wherein a ratio of the alkaline agent to the oxidizing agent is from 1:0.1 to 1:100, and the oxidizing agent is supplied at a rate of 0.5–50 grams per liter of the remaining constituents, thereby producing a purified acetone having a permanganate time of at least five hours.

US 6,340,778 B1

PROCESS FOR CATALYTIC ALDOL CONDENSATIONS BY MEANS OF A MULTIPHASE REACTION

Wilfried Bueschken; Klaus-Diether Wiese, both of Haltern; Guido Protzmann, Marl, and Juergen Koch, Haltern, all of Germany, assignors to Oxeno Olefinchemie GmbH, Marl, Germany

Filed Oct. 24, 2000, Appl. No. 694,350

Claims priority, application Germany, Nov. 30, 1999, 199 57 522

Int. Cl. C07C *45/72*

U.S. Cl. 568—463 **20 Claims**

1. A process for the catalytic aldol condensation of an aldehyde, comprising

forming a multiphase reaction mixture in a tube reactor, said mixture comprising at least one continuous phase and at lease one phase dispersed in said continuous phase; and

carrying out said aldol condensation of the aldehyde in the presence of a catalyst;

wherein the catalyst is present in the continuous phase and at least one aldehyde is present in the dispersed phase; and

wherein the loading factor B of the tube reactor is equal to or greater than 0.8.

US 6,340,779 B1

CEMENT ADMIXTURE, CONCRETE, AND PROCESS FOR PRODUCING FLUOROOXYALYLENE COMPOUNDS

Genichirou Enna; Hiroki Fukuda, and Yoshihiro Ohtsuka, all of Kawasaki, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

PCT No. PCT/JP97/04335, § 371 Date May 28, 1999, § 102(e) Date May 28, 1999, PCT Pub. No. WO98/23553, PCT Pub. Date Jun. 4, 1998

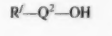
PCT Filed Nov. 27, 1997, Appl. No. 308,640

Claims priority, application Japan, Nov. 28, 1996, 8-318192

Int. Cl. C07C *45/11*

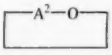
U.S. Cl. 568—615 **6 Claims**

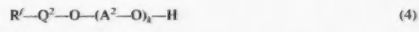
1. A method for producing fluorine-containing oxyalkylene compounds represented by the formula (4), which comprises ring opening polymerization of at least one cyclic ether represented by the formula (3) in the presence of an acid catalyst and a fluorine-containing hydroxyl compound represented by the formula (2):



(2)

(3)





(4)

wherein

R^f is a C_{1-22} polyfluoroaliphatic hydrocarbon group which may contain ethereal oxygen atoms or thioethereal sulfur atoms,

Q^2 is a C_{3-5} linear or branched alkylene group,

k is an integer of from 1 to 100, and

A^2 is a C_{2-4} linear alkylene group or a group having at least one hydrogen atom of said alkylene group substituted by a hydrocarbon group which may contain ethereal oxygen atoms.

US 6,340,780 B1

METHOD OF PREPARING SALTS OF DINITROMETHANE

Nikolai Latypov, Tumba; Ulf Wellmar, Södra Sandby, and Abraham Langlet, Stockholm, all of Sweden, assignors to Totalförsvarets Forskningsinstitut, Stockholm, Sweden

PCT No. PCT/SE99/02301, § 371 Date Jun. 7, 2001, § 102(e) Date Jun. 7, 2001, PCT Pub. No. WO00/34223, PCT Pub. Date Jun. 15, 2000

PCT Filed Dec. 8, 1999, Appl. No. 856,465

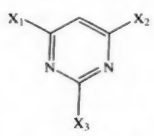
Claims priority, application Sweden, Dec. 8, 1998, 9804252

Int. Cl. C07C *205/02*

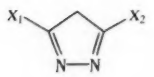
U.S. Cl. 568—944 **13 Claims**

1. A method of preparing salts of dinitromethane, charactersed by nitration of a heterocyclic compound of the general formula

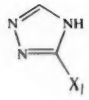
[1]



[2]



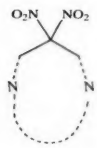
[3]



and tautomers thereof, where X_1 and X_2 are the same or different and selected from a group consisting of =O, =S, —OH, —SH, halogen, =H—OH, —NH_2, —NH—R where R=alkyl and X_3, is selected from a group consisting of —H, alkyl, —NO_2, =O, =S, —OH, —SH, —N_3, —CN, —CNO, —NCO, —CHO, —COOH, —COOR', —C(O)—R', —C(S)—R', —C(O)—S—R', —C(S)—S—R', —C(O)—N(R')—R" where R' and R" are alkyl or aryl,

with a nitrating agent to form a gem-dinitro compound containing the structural element

[4]



in the heterocyclic ring structure;

hydrolysation of said gem-dinitro compound in an aqueous medium to split off dinitromethane, and

neutralisation of said dinitromethane with a neutralising agent to form a corresponding dinitromethane salt.

US 6,340,781 B1

PURIFICATION OF PENTAFLUOROETHANE

Charles John Shields, Warrington, and Gary Goodyear, Wirral, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, United Kingdom

PCT No. PCT/GB93/01518, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO94/02439, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 20, 1993, Appl. No. 374,669

Claims priority, application United Kingdom, Jul. 22, 1992, 9215562; Jul. 22, 1992, 9215563

This patent is subject to a terminal disclaimer.

***Int. Cl. C07C** 17/395*

U.S. Cl. 570—177 **8 Claims**

1. A process for the removal of at least one compound selected from the group consisitng of chloroalkane, chlorofluoroalkane, hydrochlorofluoroalkane and hydrofluoroalkane impurities from pentafluoroethane which comprises contacting the impure pentafluoroethane with hydrogen at a temperature of at least 350° C. in the presence of a hydrogenation catalyst to convert the impurity or impurities to at least one member of the group consisting of a hydrofluoroalkane and a hydrocarbon and separating the resulting hydrofluoroalkane and/or hydrocarbon from the pentafluoroethane.

US 6,340,782 B1

METHOD OF SECURING AN ELASTIC BAND AND AN ARTICLE THAT INCLUDES SUCH AN ELASTIC BAND

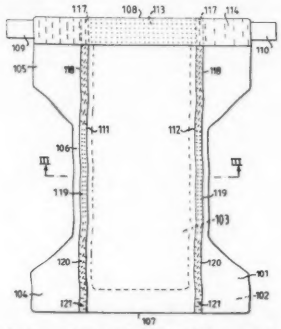
Robert Kling, Skene, and Berth-Ove Wall, Landvetter, both of Sweden, assignors to SCA Hygiene Products Aktiebolag, Gothenburg, Sweden

Continuation of application No. 08/240,207, filed on May 9, 1994, now abandoned, which is a continuation of application No. 07/844,629, filed on Apr. 1, 1992, now abandoned. This application Feb. 8, 1996, Appl. No. 597,377.

Claims priority, application Sweden, Oct. 4, 1989, 8903256

Int. Cl. A61F *13/15;13/20;* **B32B** *31/16;31/00*

U.S. Cl. 604—366 **22 Claims**



1. A method of securing an elastic band between two layers of at least partially meltable material, comprising: placing a stretched elastic band between two layers of at least partially meltable material; and forming perforations in the stretched elastic band directly followed by bonding together through said perforations portions of said layers located opposite said perforations by heat fusion so that the layers are bonded to one another through the perforations while the elastic band is movable relative to the layers.

13. A diaper comprising an absorbent pad enclosed between a liquid-permeable casing layer which is intended to face a wearer in use and a liquid-impermeable casing layer which is intended to lie remote from the wearer in use, the diaper having edges that define diaper margins, a front part which is intended to be located forwardly on the wearer in use, a rear part which is intended to be

located rearwardly on the wearer in use, and a crotch part which is located between the front part and the rear part and which is intended to be placed between thighs of the wearer in use so that the diaper, when worn, embraces the lower abdomen of the wearer and therewith presents a waist margin around the waist of the wearer and a leg margin around each of the user's thighs, and including at least one elastic band which is secured in a stretched state between two material layers which are at least partially comprised of a meltable material, the at least one elastic band having perforations through all of which the material layers located on opposite sides of the at least one elastic band are bonded to one another as a result of forming the perforations while the elastic band is stretched directly followed by bonding the material layers through the perforations in the stretched elastic band by heat fusion, the material layers being bonded in a bonding pattern so that the at least one elastic band is held mechanically between the material layers and so that the elastic band is movable relative to the material layers, the at least one elastic band being affixed along at least a part of at least one of the diaper margins, at least one of the material layers being joined to one of the casing layers in at least one of the diaper margins, wherein at least one of the material layers comprises one of the casing layers.

US 6,340,783 B1

RODENT MODELS OF HUMAN AMYLOIDOSES

Alan D. Snow, Seattle, Wash., assignor to University of Washington, Seattle, Wash.

Division of application No. 08/461,216, filed on Jun. 5, 1995, now Pat. No. 5,958,883, which is a continuation of application No. 07/969,734, filed on Oct. 23, 1992, now abandoned, which is a continuation-in-part of application No. 07/950,417, filed on Sep. 23, 1992, now abandoned. This application Oct. 3, 1996, Appl. No. 723,661.

Int. Cl. A01K *67/00;* **A61K** *38/00;1/30;* **G01N** *1/30;38/48*

U.S. Cl. 800—12 **20 Claims**

1. A method for producing a rodent model of Alzheimer's disease comprising a) infusing a proteoglycan, or fragments thereof, in combination with a beta-amyloid protein into brain tissue of a rodent, b) allowing sufficient time for the proteoglycan, or fragments thereof, and the beta-amyloid protein to be co-deposited in the brain tissue, and c) detecting the amyloid deposit in the brain tissue using standard staining techniques for fibrillar amyloid.

US 6,340,784 B1

METHOD FOR SELECTIVE INCREASE OF THE ANTICARCINOGENIC GLUCOSINOLATES IN *BRASSICA SP.*

Richard Mithen, Norwich; Kathy Faulkner, East Dereham, and Gary Williamson, Kings Lynn, all of United Kingdom, assignors to Plant Bioscience Limited, United Kingdom

Provisional application No. 60/081,169, filed on Apr. 9, 1998. *This application Apr. 8, 1999, Appl. No. 288,026.*

Int. Cl. A01H *1/02;5/00;* **C12N** *5/04*

U.S. Cl. 800—306 **19 Claims**

1. A method for the production of *Brassica oleracea* with elevated levels of 4-methylsulfinylbutyl glucosinolates, or 3-methylsulfinylpropyl glucosinolates, or both, which comprises:

(a) crossing a wild Brassica species selected from the group consisting of *B. villosa* and *B. drepanensis* with a *Brassica oleracea* breeding line to produce hybrid plants; and

(b) selecting the hybrid plants of step (a) with levels of 4-methylsulfinylbutyl glucosinolates, or 3-methylsulfinylpropyl glucosinolates, or both, elevated above that initially found in the *Brassica oleracea* breeding line.

US 6,340,785 B1

INBRED TOMATO LINE FDR 26-682

Cathy R. Thome, 764 Carr Ave., Aromas, Calif. 95004, and Robert F. Heisey, 800 Carignane Dr., Gilroy, Calif. 95020

Filed Jul. 30, 1999, Appl. No. 365,366

Int. Cl. A01H *5/00;1/00;1/02;* **C12N** *5/00;5/02*

U.S. Cl. 800—317.4 **12 Claims**

1. Inbred tomato seed designated FDR 26-682 having ATCC Accession No. PTA-3430.

US 6,340,786 B1

INBRED CORN PLANT 17INI30 AND SEEDS THEREOF

Steven K. Johnson, Sycamore, Ill., assignor to Dekalb Genetics Corporation, Dekalb, Ill.

Filed Jan. 31, 2000, Appl. No. 495,422

Int. Cl. A01H *5/00;5/10;1/02;5/04;* **C12N** *5/04*

U.S. Cl. 800—320.1 **28 Claims**

1. Inbred corn seed of the corn plant 17INI30, a sample of said seed having been deposited under ATCC Accession No. PTA-1923.

US 6,340,787 B1

POWER CONVERTER FOR SUPPLYING ELECTRICITY FROM A DIFFERENCE IN TEMPERATURE

Janick Simeray, 9, rue Paul Bert, F-92700 Colombes, and Pascal Laligant, 4, rue Pierre Mendes France, F-60330 Le Plessis Belleville, both of France

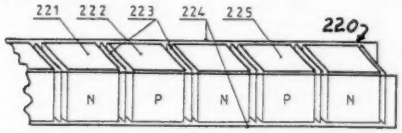
PCT No. PCT/FR97/02165, § 371 Date Jan. 3, 2000, § 102(e) Date Jan. 3, 2000, PCT Pub. No. WO98/25333, PCT Pub. Date Jun. 11, 1998

PCT Filed Dec. 1, 1997, Appl. No. 319,128

Claims priority, application France, Dec. 2, 1996, 96 14734; Aug. 13, 1997, 97 10338

Int. Cl. H01L *35/34*

U.S. Cl. 136—201 13 Claims



10. A thermoelectric component made of bismuth tellurium bars (**222** and **221**) doped with antimony and bismuth tellurium bars doped with selenium, to provide a rod (**220**) made of alternating P and N doped bars (**222** and **221**) respectively;

the bars (**222** and **221**) being joined to one another at opposing faces in a alternating array by electrically and thermally insulating membranes (**223**);

the bars being mechanically strengthened along at least one set of coextensive side faces by an electrically and thermally insulating membrane (**224**), the bars having nickel plated apparent faces (**225**) that have bismuth tin plated membranes (**263**) that form a brazed connection with engraved copper nickel plated tracks (**262**) insuring junction of adjacent bars (**222** and **221**); and

the electrically insulating and thermally conducting membrane (**252**, **264**) being made of a copper engraved nickel-plated and bismuth tin plated material and the electrical circuit being realized on a rigid thermally conducting support (**251**, **265**) covered with the electrically insulating and conducting membrane (**252**, **264**).

US 6,340,788 B1

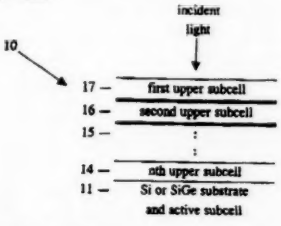
MULTIJUNCTION PHOTOVOLTAIC CELLS AND PANELS USING A SILICON OR SILICON-GERMANIUM ACTIVE SUBSTRATE CELL FOR SPACE AND TERRESTRIAL APPLICATIONS

Richard R. King, Newbury Park; Nasser H. Karam, Northridge, and Moran Haddad, Winnetka, all of Calif., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Filed Dec. 2, 1999, Appl. No. 454,063

Int. Cl. H01L *31/00*

U.S. Cl. 136—261 93 Claims



1. A photovoltaic cell, comprising:

an active substrate comprising one of Si and SiGe, said substrate having an upper side and a lower side opposite said upper side and being characterized by a substrate bandgap and a substrate lattice constant; and

at least one subcell disposed adjacent one of said upper side and lower side of said substrate, said subcell being characterized by a one subcell lattice constant and current matched to said active substrate.

US 6,340,789 B1

MULTILAYER PHOTOVOLTAIC OR PHOTOCONDUCTIVE DEVICES

Klaus Petritsch, Cambridge, United Kingdom, and Magnus Granstrom, Molnlucke, Sweden, assignors to Cambridge Display Technology Limited, Cambridge, United Kingdom

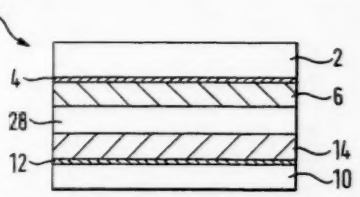
PCT No. PCT/GB99/00349, § 371 Date Sep. 15, 2000, § 102(e) Date Sep. 15, 2000, PCT Pub. No. WO99/49525, PCT Pub. Date Sep. 30, 1999

PCT Filed Feb. 2, 1999, Appl. No. 646,325

Claims priority, application United Kingdom, Mar. 20, 1999, 9806066

Int. Cl. H01L *51/20;51/30;51/40;31/04*

U.S. Cl. 136—263 47 Claims



1. A method of forming a photovoltaic or photoconducting device comprising the laminating together of a first component having a first electrode and a first semiconductive layer predominantly comprising a first semiconductive material, and a second component having a second electrode and a second semiconductive layer predominantly comprising a second semiconductive material, wherein the laminating step involves the controlled joining of said first semiconductive layer and said second semiconductive layer to form a mixed layer comprising proportionally less of said first semiconductive material than said first semiconductive layer and proportionally less of said second semiconductive material than said second semiconductive layer while retaining said first and second semiconductive layers with a reduced thickness.

US 6,340,790 B1

MEANS AND METHOD FOR INTEGRATED LIGHTING FIXTURE SUPPORTS AND COMPONENTS

Myron K. Gordin, and James L. Drost, both of Oskaloosa, Iowa, assignors to Musco Corporation, Oskaloosa, Iowa

Continuation of application No. 08/791,641, filed on Jan. 28, 1997, now abandoned, which is a continuation of application No. 08/278,999, filed on Jul. 22, 1994, now abandoned, which is a continuation of application No. 07/652,557, filed on Feb. 6, 1991, now abandoned, which is a continuation-in-part of application No. 07/472,822, filed on Jan. 31, 1990. This application Nov. 1, 1997, Appl. No. 967,579.

Int. Cl. E04H *12/24*

U.S. Cl. 174—45 R 20 Claims

1. A combination of tall pole and cross arms for elevating a plurality of large wattage light fixtures, which is partially pre-assembled and pre-wired, then conveniently shipped, and then completely pre-assembled and pre-wired prior to erection at the location of installation of the pole in the ground, comprising:

a base including a lower portion adapted for insertion and anchoring in the ground or to other supporting structure and an upper portion having an outside diameter;

a hollow pole shipable in one or more sections, having a top with an upper open end and a bottom with a lower open end, which is mateably slip-fittable over at least a portion of the upper section of the base;

a plurality of lighting fixtures mounted to one or more cross arms;

a pole top including an elongated hollow vertical portion which is mateably slip fittable over the top of the pole, a hollow extension extending laterally from the elongated hollow vertical portion to each fixed cross arm, interior passageways in each cross arm communicating with openings at spaced apart positions in each cross arm defining attachment locations for the plurality of lighting fixtures;

pre-wired cables between lighting fixtures and the hollow section, the pre-wired cables terminating in a header which is accessible through an opening in the top pole which is sealable by a removable cover member;

pre-sized cables having a connection to said header and a length to extend from said header through the interior of the pole to in the vicinity of the base when the apparatus is assembled;

adjustable connection mounts between the attachment locations on each cross arm and the lighting fixtures to allow pre-assembly of lighting fixtures to each cross arm and pre-aiming of lighting fixtures prior to shipping, and final pre-aiming once at the installation location;

slip fit joints between any pole sections and between said pole top and the top of the pole to allow final assembly of the tall pole with the pole top and fixtures on the ground at the assembly location, with pre-wired cables extending in the hollow pole, and including a component for securing the cables in place in the pole, a component for deterring abrasion of the cables with the interior of the pole and a second header to electrically connect said cables to the header the pole top, to complete pre-wiring from the fixtures to at or near the bottom of the pole when the pole and pole top are on the ground;

a ballast box with a mounting bracket;

a bracket on the exterior near the bottom of the pole to allow mounting of the ballast box to the bracket on the pole when the pole is on the ground, the brackets including a receiver member on the pole means and a capture member near the top of the ballast box, to allow securement of the top end of the ballast box to the pole, the pole having an opening and a hollow connecting piece space apart from and below the receiver which mates into a receiving opening near the lower end of the ballast box;

internal pre-wiring between pre-assembled electrical components in the ballast box, including multiple ballasts for the plurality of light fixtures, in the ballast box, and connectors to connect up with the cables in the pole; and

a connection in the ballast box for quick connection to service lines to electrically connect the electrical circuitry of the pole to an electrical power source so that the pre-assembled tall pole can then be erected onto said base in the ground, with all light fixtures pre-assembled, pre-aimed, and pre-wired to a ballast box and electrical power source.

US 6,340,791 B1

MEANS AND PROCESS FOR ENCAPSULATING ELECTRIC CIRCUITS BY MEANS OF INJECTION MOLDING

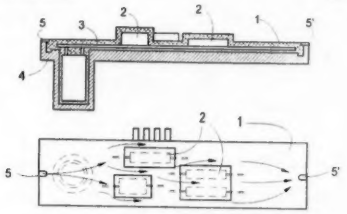
Oliver Stotz, Rohnstäter, Germany, assignor to Mannesmann VDO AG, Germany

Filed Aug. 23, 1999, Appl. No. 379,473

Claims priority, application Germany, Aug. 22, 1998, 198 38 266

Int. Cl. H02G *3/08*

U.S. Cl. 174—52.1 **18 Claims**



1. A structure for protecting an electric circuit comprising:

a circuit surrounded with a thermoplastic polymer which is applied by injection molding, wherein the thermoplastic polymer is comprised of oriented macromolecules and wherein a majority of the components of the circuit are aligned with their axis most sensitive to alternating tensile loading being parallel to the respective direction of the macromolecules present in the vicinity of the components.

US 6,340,792 B1

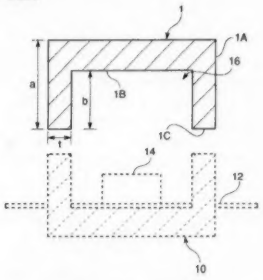
MOLD CAP FOR SEMICONDUCTOR DEVICE MOLD PACKAGE

Tomoaki Hirokawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 30, 1997, Appl. No. 841,573

Int. Cl. H01L *23/02*

U.S. Cl. 174—52.4 **9 Claims**



1. A semiconductor device mold package comprising:

a mold cap having a recess defined by an inner wall surface and surrounded by a mouth portion, a height from the mouth portion to a top of an outer wall surface being defined as "a", the mouth portion forming a right angle with the outer wall surface, a height from the mouth portion to a top of the inner wall surface being defined as "b", and a thickness of the mold cap at the mouth portion being defined as "t", the mold cap being constructed to fulfill a relation of $a-b \geqq t$ and $a-b<b$;

a mold case joined to the mold cap to form a hollow closed space that encapsulates a gas therein; and

a lead frame supporting a semiconductor chip that is contained in the closed space,

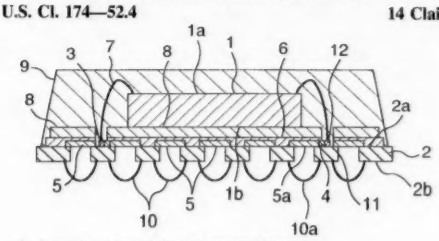
wherein the lead frame extends through a wall of the mold case.

US 6,340,793 B1

SEMICONDUCTOR DEVICE

Akihiro Yaguchi, Iwama; Ryo Haruta, and Masahiro Ichitani, both of Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 14, 2000, Appl. No. 525,026
Claims priority, application Japan, Mar. 17, 1999, 11-071409
Int. Cl. H01L *23/28;23/02;* H05K *1/18*
U.S. Cl. 174—52.4 14 Claims



1. A semiconductor device comprising:

a first insulating member;

external terminals provided on a main surface of said first insulating member;

a semiconductor chip provided on the opposite side to said main surface of said first insulating member on which said external terminals are provided;

a conductive member for electrically connecting said semiconductor chip and said external terminals; and

a sealing member provided on the opposite side to said main surface of said first insulating member on which said external terminals are provided,

wherein a second insulating member is interposed between said semiconductor chip and said first insulating member, and wherein the outer edge of said second insulating member projects from the outer edge of said semiconductor chip;

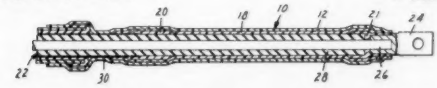
wherein the elastic coefficient of said second insulating member is lower than that of said first insulating member.

US 6,340,794 B1

STRESS CONTROL FOR TERMINATION OF A HIGH VOLTAGE CABLE

Robert A. Wandmacher, Cedar Park; Lawrence C. Chor, and John T. Larson, both of Austin, all of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application No. 08/524,236, filed on Sep. 6, 1995, now abandoned. This application Dec. 16, 1996, Appl. No. 763,390.
Int. Cl. H02G *15/064*
U.S. Cl. 174—73.1 8 Claims



1. A termination for an electrical power cable including an inner conductor, electrical insulation surrounding the conductor and a semi-conductive shield surrounding the insulation, wherein the shield is removed to a predetermined length and the insulation is removed to a lesser predetermined length to expose the conductor, the termination comprising:

a first region of relatively high permittivity conformable stress control material in contact with a cut end of the cable shield and extending along the cable insulation;

a second region of relatively high permittivity conformable stress control material disposed in contact with a cut end of the cable insulation; and

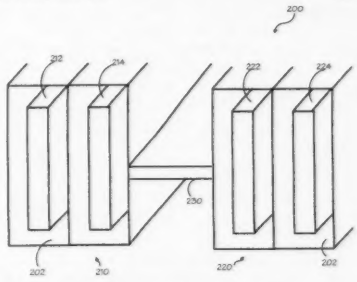
a polymeric electrically insulating layer extending from a first end of the termination to a second end of the termination, the electrically insulating layer disposed over said first and second regions of relatively high permittivity conformable stress control material.

US 6,340,795 B1

ELECTRICAL CABLE

Barry Caldwell, Hesston, Kans., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 17, 2000, Appl. No. 617,160
Int. Cl. H01B *7/08*
U.S. Cl. 174—117 FF 18 Claims



1. An electrical cable, comprising:

a first pair of electrical conductors, including

a first flat conductor surrounded by an insulator;

a second flat conductor surrounded by an insulator, wherein the first flat conductor and the second flat conductor are spaced so as to form an electrical differential pair;

a second pair of electrical conductors, including

a third flat conductor surrounded by an insulator;

a fourth flat conductor surrounded by an insulator, wherein the third flat conductor and the fourth flat conductor are spaced so as to form an electrical differential pair; and

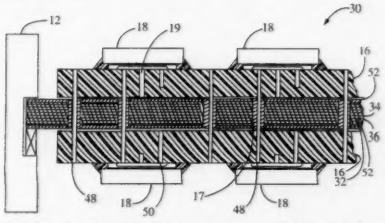
a spacer disposed between the first pair of electrical conductors and the second pair of electrical conductors, the spacer formed so as to isolate an electromagnetic field from the first pair of electrical conductors from an electromagnetic field from the second pair of electrical conductors, wherein the first pair of electrical conductors, the spacer and the second pair of electrical conductors are arranged to form a generally "H" shaped structure.

US 6,340,796 B1

PRINTED WIRING BOARD STRUCTURE WITH INTEGRAL METAL MATRIX COMPOSITE CORE

Carl R. Smith, Cary; Jeffrey R. Madura, Lake Zurich, and Jesse J. Kramer, Park Ridge, all of Ill., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

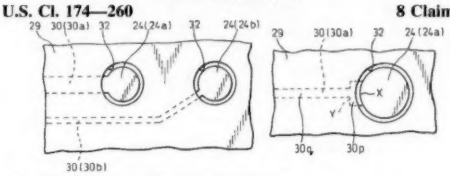
Filed Jun. 2, 1999, Appl. No. 324,288
Int. Cl. H05K *1/03*
U.S. Cl. 174—255 5 Claims



1. A printed wiring board structure comprising at least one chip-carrying layer adjacent a core fabricated of a metal matrix having disposed therein continuous pitch based graphite fibers,

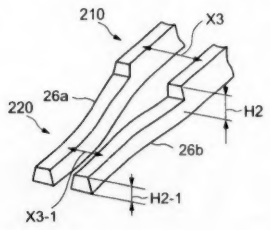
with said layer and said core having an interface therebetween and wherein the layer is integrally connected along said interface at a plurality of connection sites at the core at a plurality of vias each plated with a thermally and electrically conductive material and extending between the layer and the core.

US 6,340,797 B1
PRINTED CIRCUIT BOARD HAVING SIGNAL PATTERNS OF VARYING WIDTHS
Takashi Yoshida; Masahide Watanabe, and Nobuo Taketomi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 21, 1999, Appl. No. 468,295
Claims priority, application Japan, Apr. 30, 1999, 11-125015
Int. Cl. H05K *1/16*
U.S. Cl. 174—260 **8 Claims**



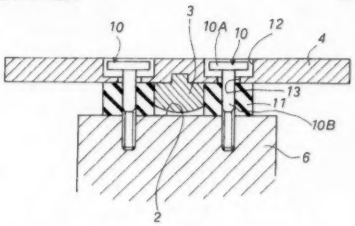
1. A printed circuit board comprising:
a plurality of connecting portions for connection to terminals of a component; and
signal patterns extending from said connecting portions, said connecting portions including outer connecting portions and inner connecting portions;
wherein said printed circuit board has opposed outer edges, said outer connecting portions being located closer to each said opposed outer edge than said inner connecting portions; and
wherein a width of at least a portion of said signal pattern extending from and located adjacent to said outer connecting portion is greater than a width of at least a portion of said signal pattern extending from and located adjacent to said inner connecting portion.

US 6,340,798 B1
PRINTED CIRCUIT BOARD WITH REDUCED CROSSTALK NOISE AND METHOD OF FORMING WIRING LINES ON A BOARD TO FORM SUCH A PRINTED CIRCUIT BOARD
Kazuhiko Tokuda, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Aug. 1, 2000, Appl. No. 630,685
Claims priority, application Japan, Nov. 30, 1999, 11-340815
Int. Cl. H01R *9/09*
U.S. Cl. 174—261 **30 Claims**



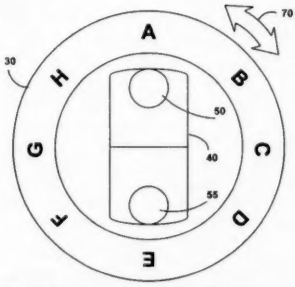
1. A printed circuit board comprising:
a first wiring line; and
a second wiring line spaced apart from the first wiring line,
the first wiring line having first and second portions, the first portion having a surface which faces the second wiring line and is smaller in area than that of the second portion, so that a crosstalk noise between the first portion of the first wiring line and the second wiring line can be reduced.

US 6,340,799 B1
WEIGHING APPARATUS
Kazuaki Hama, and Fumiya Kobayashi, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Oct. 20, 1999, Appl. No. 421,975
Claims priority, application Japan, Oct. 22, 1998, 10-301422; Nov. 24, 1998, 10-333037; Dec. 1, 1998, 10-342085
Int. Cl. G01G *21/28*
U.S. Cl. 177—238 **10 Claims**



1. A weighing apparatus comprising:
an apparatus body with strain gages;
a load button to transmit a weight of an object to be measured to a loading surface of the apparatus body;
a top plate on one side of which the load button is installed and to the other side of which the object weight is applied;
the load button having a semispherical bottom surface and a top surface fixed to the top plate and the semispherical bottom surface being opposite the load;
an elastic member having a greater height than a protrusion distance of the load button from the top plate and, provided around the load button, and provided between the loading surface and top plate; and
connecting members to connect the top plate to the loading surface in such a manner that the top plate can move horizontally within a predetermined range and tilt about the load button, and to prevent the top plate from coming out upward.

US 6,340,800 B1
MULTIPLEXING CONTROL DEVICE AND METHOD FOR ELECTRONIC SYSTEMS
Shumin Zhai, San Jose, Calif., and Phillip Edward Partin, Wake Forest, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 27, 2000, Appl. No. 580,994
Int. Cl. H01H *3/20*
U.S. Cl. 200—5 R **20 Claims**



1. A multiplexing control device comprising:
a selector for allowing a user to manually select a pair of a plurality of functions;

an executor disposed at a fixed location relative to the selector, for causing one function of the pair of functions to be executed; and

wherein when the selector selects a pair of functions, the executor is aligned with the selected pair of functions.

US 6,340,801 B1

ROTARY ENCODER AND MULTI-OPERATIONAL ELECTRONIC COMPONENT USING THE SAME

Tetsuya Fukuda; Takahiro Nishimura; Jun Sato; Koji Ono; Takumi Nishimoto, all of Okayama; Yukihiro Ishihara, and Masaki Sawada, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

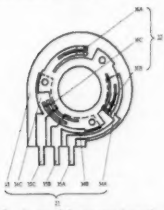
Filed Nov. 16, 2000, Appl. No. 713,224

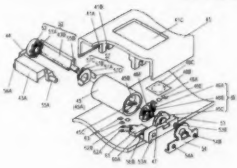
Claims priority, application Japan, Nov. 19, 1999, 11-329494

This patent is subject to a terminal disclaimer.

Int. Cl. H01H *25/00*

U.S. Cl. 200—18 **11 Claims**





1. A multi-operational electronic component including a rotary encoder and a self-restoring push switch, said rotary encoder comprising:

a quadrangular frame, said quadrangular frame comprising a first side section, a second side section, a third side section and a fourth side section, said first side section facing said second side section, said third side section facing said fourth side section, said second side section rotatably retaining said quadrangular frame so as to function as a support axis for said quadrangular frame;

a cylindrical rotary body comprising a first end, a second end and a periphery, said periphery being an operating section, said cylindrical rotary body being rotatably retained by said third side section of said quadrangular frame and said fourth side section of said quadrangular frame, said cylindrical rotary body being oriented parallel with said second side section of said quadrangular frame;

a movable contact plate comprising three elastic contacts, said movable contact plate being retained at one of said ends of said cylindrical rotary body;

a contact plate disposed on one of said side sections of said quadrangular frame, said contact plate disposed so as to face said movable contact plate, and

three fan-shaped conductive layers disposed on said contact plate, said fan-shaped conductive layers having lead terminals, respectively;

wherein pressing of said first side section rotates said quadrangular frame about said second side section, thereby activating said self-restoring push switch.

US 6,340,802 B1

LOCKOUT MECHANISM FOR POWER TOOL

James P. Bascom, Bel Air, and John E. Buck, Cockeysville, both of Md., assignors to Black & Decker, Inc., Newark, Del.

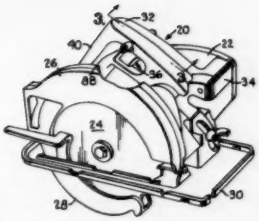
Continuation of application No. 09/133,846, filed on Aug. 14, 1998, now Pat. No. 6,057,518. This application Mar. 14, 2000, Appl. No. 524,867.

This patent is subject to a terminal disclaimer.

Int. Cl. H01H *9/28*

U.S. Cl. 200—43.17 **14 Claims**

1. A power tool comprising:



a housing including an elongated handle having first and second ends, the handle having an internal cavity and opposed top and bottom walls and opposed side walls for receiving a hand of a user with a palm on the top wall, a thumb and index finger of the user adjacent the first end of the handle, and a pinkie of the user adjacent the second end of the handle, and an opening formed in at least on the side walls;

a motor in the housing;

a switch mounted in the handle cavity for actuating the motor;

a latch controlling actuation of the switch, mounted in the handle cavity adjacent the switch and movable between an engaged position engaging the switch and a disengaged position disengaging the switch;

the latch extending through the side wall opening and having an upper position when the latch is in the engaged position and a lower position when the latch is in the disengaged position, and

the latch having a surface engageable by the thumb of the user, the surface sloping downwardly from the side wall having the opening to a distal end of the latch.

US 6,340,803 B1

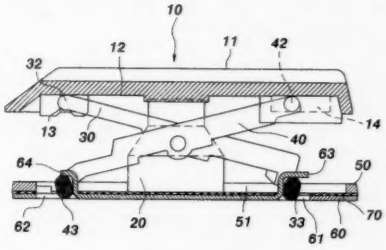
COMPUTER KEYSWITCH

Tung Hsueh Li, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Jan. 25, 2001, Appl. No. 768,307

Int. Cl. H01H *13/70*

U.S. Cl. 200—344 **1 Claim**



1. A computer keyswitch, comprising:

a bottom plate having a plurality of through holes formed therein, said bottom plate having a predetermined thickness and a plurality of clamping plates extending upwardly therefrom and respectively across said plurality of through holes;

a membrane circuit overlaying said bottom plate and having a plurality of apertures formed therein in respective aligned relationship with said plurality of through holes and through which said plurality of clamping plates respectively extend;

a base overlaying said membrane circuit, said base having an opening formed therethrough, said plurality of clamping

plates extending into said opening, said base having a thickness greater than said predetermined thickness of said bottom plate;

a resilient body disposed in said opening of said base and having a lower end disposed on said membrane circuit;

a keycap having a mounting surface on a bottom side thereof, said resilient body having an upper end contacting said bottom side of said keycap; and,

a first lever and a second lever disposed in a scissors arrangement between said mounting surface of said keycap and said bottom plate, said first and second levers having respective top ends assembled to said mounting surface and respective bottom ends formed with pivotal shafts, said pivotal shafts being respectively disposed in said through holes of said bottom plate and respectively captured therein by said plurality of clamping plates.

US 6,340,804 B1

PAPER SHEET SORTING APPARATUS AND SORTING METHOD

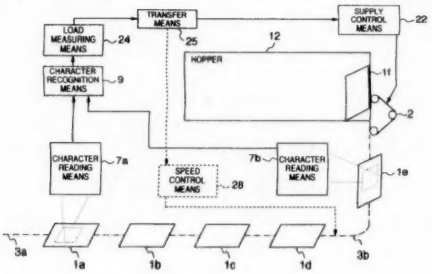
Junichi Tamamoto, Ibaraki-ken; Taichiro Yamashita, Tsuchiura, and Kichio Nakajima, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 3, 1998, Appl. No. 33,979

Claims priority, application Japan, Mar. 12, 1997, 9-057364

Int. Cl. B07C *3/14*

U.S. Cl. 209—584 **31 Claims**



1. A paper sheet sorting apparatus comprising:

supply means for supplying paper sheets one by one;

supply control means connected with said supply means for controlling a supply interval of said paper sheets;

information acquisition means for acquiring information on said paper sheets;

information processing means for processing the information acquired by said information acquisition means to determine transport destinations of said paper sheets;

deposit means for depositing said paper sheets processed by said information processing means;

distribution means for distributing said paper sheets to ones of said deposit means on the basis of the transport destination determined by said information processing means;

transport means for transporting said paper sheets from said supply means to said deposit means; and

load measuring means for measuring a processing load necessary for processing the information on said paper sheets by said information processing means;

wherein said supply control means controls operation of said supply means to adjust the supply interval of said paper sheets in accordance with the processing load measured by said load measuring means.

US 6,340,805 B1

METHOD OF MANUFACTURING A WIRE SCREEN PRODUCT

Risto Ljokkoi, Karhula, Finland, assignor to Andritz-Ahlstrom Oy, Helsinki, Finland

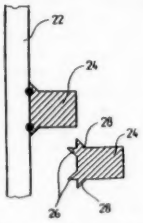
PCT No. PCT/FI96/00639, § 371 Date May 28, 1998, § 102(e) Date May 28, 1998, PCT Pub. No. WO97/20104, PCT Pub. Date Jun. 5, 1997

PCT Filed Nov. 28, 1996, Appl. No. 77,701

Claims priority, application Finland, Nov. 28, 1995, 955724

Int. Cl. B33K *9/007;11/11;* **B21F** *15/08;27/10*

U.S. Cl. 219—58 **9 Claims**



1. A method of producing a wire screen product, the wire screen product including at least one screen wire and at least one support wire that transversely crosses the screen wire, the support wire including a first ridge and a second ridge, the method comprising:

contacting the screen wire and the first ridge of the support wire at a location where the screen wire and the support wire transversely cross;

welding the screen wire to the support wire at the first ridge using a first weld; and

thereafter contacting the screen wire and the second ridge of the support wire at the location where the screen wire and the support wire transversely cross, and welding the screen wire to the support wire at the second ridge using a second weld.

US 6,340,806 B1

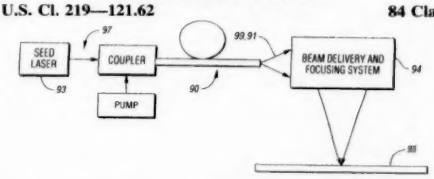
ENERGY-EFFICIENT METHOD AND SYSTEM FOR PROCESSING TARGET MATERIAL USING AN AMPLIFIED, WAVELENGTH-SHIFTED PULSE TRAIN

Donald V. Smart, Boston, Mass., and Donald J. Svetkoff, Ann Arbor, Mich., assignors to General Scanning Inc., Wilmington, Mass.

Continuation-in-part of application No. 09/473,926, filed on Dec. 28, 1999, now Pat. No. 6,281,471. This application Jun. 1, 2000, Appl. No. 585,693.

Int. Cl. B23K *26/00;26/36*

U.S. Cl. 219—121.62 **84 Claims**



1. An energy-efficient, laser-based method for processing target material having a specified dimension in a microscopic region without causing undesirable changes in electrical or physical characteristics of material surrounding the target material, the method comprising:

generating a laser pulse train utilizing a laser having a first wavelength at a repetition rate wherein each of the pulses of the pulse train has a predetermined shape;

optically amplifying the pulse train without significantly changing the predetermined shape of the pulses to obtain an amplified pulse train wherein each of the amplified pulses has a substantially square temporal power density distribution, a sharp rise time, a pulse duration and a fall time;

controllably shifting the first wavelength to a second wavelength different from the first wavelength to obtain an amplified, wavelength-shifted, pulse train; and

delivering and focusing at least a portion of the amplified, wavelength-shifted, pulse train into a spot on the target material wherein the rise time is fast enough to efficiently couple laser energy to the target material, the pulse duration is sufficient to process the target material, the fall time is rapid enough to prevent the undesirable changes to the material surrounding the target material and the second wavelength more efficiently couples laser energy to the target material than the first wavelength.

US 6,340,807 B2

TEMPERATURE-PRESERVING ELECTRICALLY HEATED COOKER

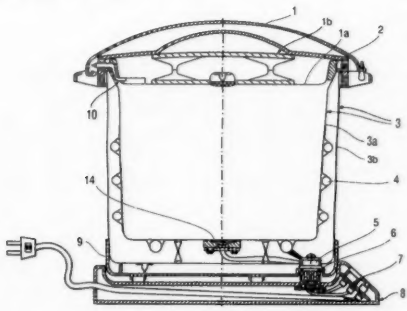
Dongming Wang, Room 1-415, Luyuan, No. 16 Renmin W. Road, Zhuhai, Guangdong, China

Filed Mar. 20, 2001, Appl. No. 811,460

Claims priority, application China, Mar. 23, 2000, 00227688; Nov. 16, 2000, 00240172

Int. Cl. A47J *27/00*

U.S. Cl. 219—429 **7 Claims**



1. A temperature-preserving electrically heated cooker comprising:

a body comprising a housing and a container between which a first temperature-preserving chamber is constituted;

a lid connected to an upper part of said body;

heating means for heating said container;

a controller for controlling a heating time and a heating temperature of said heating means; and

a base positioned under said body and connected separately thereto;

wherein said cooker further comprises a support under a bottom of the body.

US 6,340,808 B2

BASE CONSTRUCTION FOR A COFFEE MAKING APPARATUS

Carsten Joergensen, St. Niklausen, Switzerland, assignor to PI-Design AG, Triengen, Switzerland

Filed Dec. 15, 2000, Appl. No. 736,173

Claims priority, application Denmark, Dec. 16, 1999, 1999 1804

Int. Cl. A47J *31/24;31/30*

U.S. Cl. 219—433 **20 Claims**

1. A base construction for a coffee-making apparatus of the type wherein water is brought to a boil in a closed container having an internal bottom and pressed through a riser pipe into a funnel, where the boiling water extracts aromas and flavour from ground coffee, the coffee then being filtered back into the closed container through a filter placed at an outlet of the funnel, wherein the hot

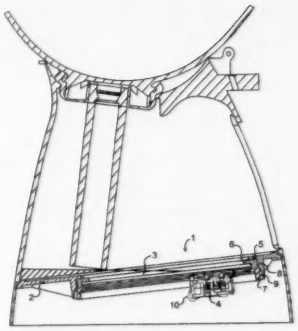


plate and the internal bottom of the closed container are positioned so that a line normal to the hot plate and the internal bottom is at no point vertical during boiling.

US 6,340,809 B2

GAS SENSOR WITH CERAMIC HEATER

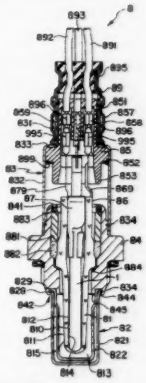
Hirokazu Yamada, Nagoya, Japan, assignor to Denso Corporation, Kariya, Japan

Division of application No. 09/365,173, filed on Aug. 2, 1999, now Pat. No. 6,194,693. This application Feb. 15, 2001, Appl. No. 783,589.

Claims priority, application Japan, Aug. 3, 1998, 10-219031; Jan. 14, 1999, 11-8185; Apr. 27, 1999, 11-120248

Int. Cl. H05B *3/16;3/10*

U.S. Cl. 219—543 **3 Claims**



1. A gas sensor comprising:

a gas sensing element having a gas-exposed portion, said gas sensing element having formed therein a chamber;

a ceramic heater disposed within the chamber of said gas sensing element to heat said gas sensing element, said ceramic heater including,

(a) a ceramic square rod formed with a laminate of a heater element substrate on which a heater-patterned layer consisting of a heater element and leads connected to the heater element is formed and a covering substrate covering the heater-patterned layer of the heater substrate,

(b) metallic terminals connected electrically to the leads of the heater-patterned layer of the heater substrate, respectively, said metallic terminals being mounted on surfaces of said ceramic square rod opposed to each other in a direction of lamination of the heater substrate and the covering substrate, respectively, and

(c) at least one outer lead joined to one of said metallic terminals through a bonding layer;

a first cylindrical holder fitted in the chamber of said gas sensing element, said first holder including a heater holding portion for holding said ceramic heater and a sensor contact in contact with an inner wall of said gas sensing element, the sensor contact having a sensor signal output terminal;

a second cylindrical holder mounted on an outer wall of said gas sensing element, having a sensor signal output terminal; and

a slit formed in said first holder to define a C-shaped cross section, said slit being located substantially 90°±20° apart from the sensor signal output terminal of said first cylindrical holder.

US 6,340,810 B2

DEVICE WITH INDUCTION HEATING ROLLER INCLUDING PROJECTING PORTIONS AT BOTH ENDS AND A CENTRAL PORTION OF A BOBBIN FOR MAINTAINING A GAP BETWEEN AN INNER SURFACE OF THE HEATING ROLLER AND A COIL ON THE BOBBIN

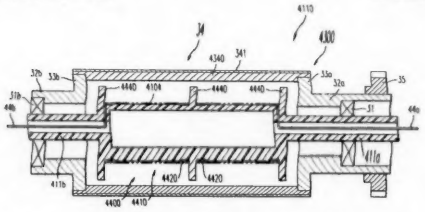
Hiroshi Yokoyama, Yokohama, and Toshiaki Higaya, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of application No. 08/977,559, filed on Nov. 25, 1997, now Pat. No. 6,255,632. This application May 3, 2001, Appl. No. 847,376.

Claims priority, application Japan, Nov. 25, 1996, 8-313497; Nov. 25, 1996, 8-313498; Nov. 29, 1996, 8-319441

Int. Cl. H05B *6/14;6/36*

U.S. Cl. 219—619 19 Claims



1. A device configured to be heated to a temperature sufficient to fuse an image forming substance to a sheet, comprising:

a hollow roller being made of a conductive material and having an inner surface;

a coil arranged in a hollow portion of the hollow roller, the coil having a conductor that is configured to carry an electrical current that induces a current in, and heats, the conductive material of the hollow roller;

a bobbin being made of an electrically insulating resin, the bobbin arranged inside the coil, a surface of the bobbin having a recess configured to receive at least a portion of the conductor, the recess being a continuous spiral slot extending between ends of the bobbin; and

a projecting portion integral with the bobbin disposed between the bobbin and the inner surface of the hollow roller so as to maintain a gap between the hollow roller and the coil, the projecting portion being made of an electrically insulating material, and being arranged on circumferential surfaces of both ends of the bobbin and near a central portion of the bobbin, wherein

the conductor of the coil is wound along the bobbin and disposed within the recess so as to form windings of the coil, and

the heat produced by said hollow roller is sufficient to fuse the image forming substance when said sheet is exposed to said heat.

US 6,340,811 B1

INDUCTION-HEATED ROLLER DEVICE

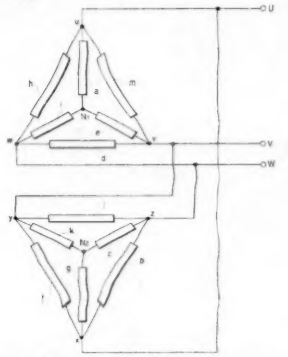
Toru Tonomura, Kyoto, Japan, assignor to Tokuden Co., Ltd., Kyoto, Japan

Filed Jun. 21, 2001, Appl. No. 884,915

Claims priority, application Japan, Jul. 6, 2000, 12-204614; Oct. 20, 2000, 12-320317

Int. Cl. H05B *6/14;6/36*

U.S. Cl. 219—619 3 Claims



1. An induction-heated roller device comprising:

a rotary roll;

twelve induction coils being successively disposed within a hollow space of said rotary roll while being spaced apart in an axial direction of said rotary roll; and

a three-phase power source for exciting said induction coils,

wherein said induction coils are arranged into: a first group of three delta connected induction coils excited by line voltages of the three-phase power source; a second group of three star-connected induction coils being excited by said line voltages and being spaced apart in a phase rotation direction of said first group of induction coils; a third group of three delta-connected induction coils being excited by phase-shifted voltages formed by phase-shifting voltages of the three-phase power source by 180° and being spaced apart in a phase rotation direction of said second group of induction coils; and a fourth group of three star-connected induction coils being excited by the phase-shifted voltages and being spaced apart in a phase rotation direction of said third group of induction coils.

US 6,340,812 B1

TWO-DIMENSIONAL IMAGE DETECTOR WITH ELECTRODES ON COUNTER SUBSTRATE

Yoshihiro Izumi, Kashihara, and Osamu Teranuma, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

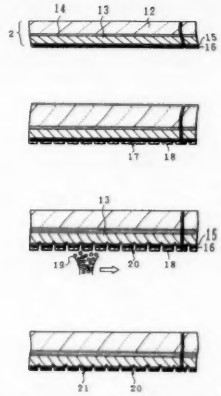
Filed Sep. 16, 1999, Appl. No. 397,147

Claims priority, application Japan, Sep. 29, 1998, 10-274867; Jun. 7, 1999, 11-158881

Int. Cl. H01J *27/00*

U.S. Cl. 250—208.1 26 Claims

1. A method for manufacturing a two-dimensional image detector, the two-dimensional image detector including an active matrix substrate and a counter substrate, the active matrix substrate having a pixel-arrayed layer in which pixel electrodes and switching elements are arrayed in a lattice form, the counter substrate having a semiconductor layer with photoconductivity and an electrode section formed so as to face substantially an entirety of a surface of the pixel-arrayed layer, the active matrix substrate being electrically connected to a connection surface of the counter substrate via a conductive material, said method including a step of forming a plurality of protuberance electrodes on the connection surface of the counter substrate, said step of forming the plurality of protuberance electrodes comprising the following substeps:



a. forming a mask having openings in a predetermined pattern, *on the electrode section;*

b. processing a mask-covered surface of the electrode section and semiconductor layer by blasting, so that at the openings of the mask the electrode section is removed while grooves are formed on the semiconductor layer; and

c. removing the mask.

US 6,340,813 B1

VARIABLE-APERTURE OPTICAL NEAR-FIELD PROBE

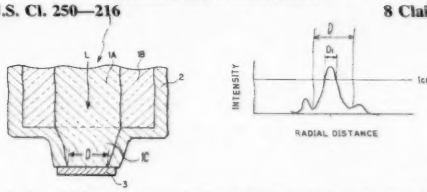
Junji Tominaga; Takashi Nakano; Nobufumi Atoda, all of Tsukuba; Motonobu Kourogi, Yokohama, and Motoichi Ohtsu, Tokyo-to, all of Japan, assignors to Japan as represented by Secretary of Agency of Industrial Science and Technology, Tokyo-To, Japan

Filed Feb. 2, 2000, Appl. No. 496,050

Claims priority, application Japan, Feb. 2, 1999, 11-024576

Int. Cl. H01J *3/14;5/16;40/14*

U.S. Cl. 250—216 **8 Claims**



1. A variable-aperture optical near-field probe having an objective end opening to which a thin film of an opaque material capable of being rendered transparent by irradiation with light is attached.

US 6,340,814 B1

MASS SPECTROMETER WITH MULTIPLE CAPACITIVELY COUPLED MASS ANALYSIS STAGES

John Vandermey, Georgetown, Canada, assignor to Sciex, A division of MDS Inc., Concord, Canada

Filed Jul. 15, 1999, Appl. No. 353,090

Int. Cl. H01J *49/42*

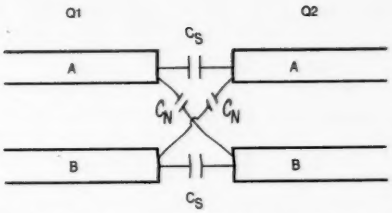
U.S. Cl. 250—292 **9 Claims**

1. A mass spectrometry apparatus comprising:

a. first and second multipole rod sets, each of said first and second multipole rod set having:

i. two or more positive rods, all of the positive rods being coupled together; and

ii. two or more negative rods, all of the negative rods being coupled together;



b. a first voltage generator coupled to the positive and negative rods of said first multipole rod set for generating a potential in the first multipole rod set;

c. a second voltage generator coupled to the positive and negative rods of said second multipole rod set for generating a potential in the second multipole rod set;

d. a first capacitor coupled between the positive rods of said first multipole rod set and the negative rods of said second multipole rod set; and

e. a second capacitor coupled between the negative rods of said first multipole rod set and the positive rods of said second multipole rod set.

US 6,340,815 B1

HEAT MODE SENSITIVE IMAGING ELEMENT FOR MAKING POSITIVE WORKING PRINTING PLATES

Eric Verschueren, Merksplas, and Peter Geerts, Mortsel, both of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Provisional application No. 60/089,286, filed on Jun. 15, 1998.

This application Mar. 15, 1999, Appl. No. 267,636.

Claims priority, application European Pat. Off., Apr. 15, 1998, 98201214

Int. Cl. B41C *1/10;* **B41M** *5/36*

U.S. Cl. 250—318 **9 Claims**

1. A heat mode imaging element for making a lithographic printing plate having on a lithographic base with a hydrophilic surface a first layer including a polymer, soluble in an aqueous alkaline solution and a top layer on the same side of the lithographic base as the first layer which top layer is IR-sensitive and unpenetrable for an alkaline developer; characterized in that said top layer contains a compound that increases the dynamic friction coefficient of the top layer to between 0.40 and 0.80.

US 6,340,816 B1

PYROELECTRIC DETECTOR WITH FEEDBACK AMPLIFIER FOR ENHANCED LOW FREQUENCY RESPONSE

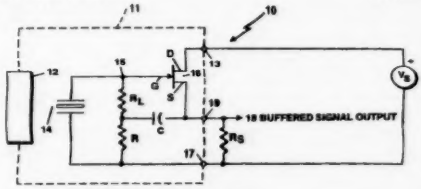
Eric S. Micko, Rescue, Calif., assignor to Honeywell International, Inc., Morristown, N.J.

PCT No. PCT/US98/04009, § 371 Date Feb. 10, 1999, § 102(e) Date Feb. 10, 1999, PCT Pub. No. WO99/44020, PCT Pub. Date Sep. 2, 1999

PCT Filed Feb. 27, 1998, Appl. No. 242,243

Int. Cl. G01J *5/10*

U.S. Cl. 250—338.3 **20 Claims**



1. A pyroelectric detector comprising:

means for sensing infrared radiation;

means connected in parallel with said sensing means for providing a load to measure said sensing means output, wherein said load means comprises a first resistor in series with a second resistor;

means coupled to said output of said sensing means for buffering said output; and

said detector comprises a feedback means connected from an output to an input of said buffering means for producing multiplication of the resistance of said load.

US 6,340,817 B1

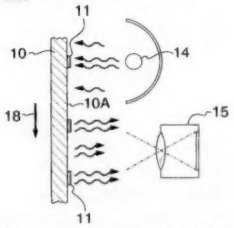
INSPECTION METHOD FOR UNPOPULATED PRINTED CIRCUIT BOARDS

Daniel Gelbart, Vancouver, Canada, assignor to Creo S.R.L., Holetown, Barbados

Filed Apr. 23, 1999, Appl. No. 301,375

Int. Cl. G01N *21/71*

U.S. Cl. 250—341.6 **29 Claims**



1. A method of inspecting and detecting defects on an unpopulated printed circuit board having metallic conductors on an electrically insulating substrate, which method comprises the steps of:

(a) changing a surface temperature of a portion of said printed circuit board;

(b) scanning the surface of said printed circuit board with a sensor, said sensor being sensitive to wavelengths above 1 micron and detecting an emission profile from said portion of the printed circuit board; and

(c) discriminating between the metallic conductors and the substrate on said portion of the printed circuit board based on differences in said emission profile.

US 6,340,818 B1

TWO-DIMENSIONAL IMAGE DETECTOR

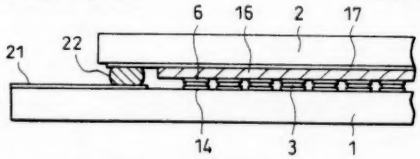
Yoshihiro Izumi, Kashihara, and Osamu Teranuma, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 14, 1999, Appl. No. 353,440

Claims priority, application Japan, Aug. 7, 1998, 10-223844

Int. Cl. G01J *1/24;* **G01B** *9/04;* **H01L** *29/08*

U.S. Cl. 250—370.13 **12 Claims**



1. A two-dimensional image detector comprising:

an active matrix substrate, provided with a pixel layer which includes pixel electrodes and switching elements arranged in matrix form;

a counter substrate which includes a first electrode section provided over substantially the entirety of said pixel layer, and a semiconductor layer having photoconductivity, provided opposite said pixel layer; and

conductive connection means which mutually connect said active matrix substrate and said counter substrate;

in which said active matrix substrate is provided with a second electrode section for inputting a signal to said first electrode section of said counter substrate; and

said first and second electrode sections are electrically connected to each other via electrode transition means.

US 6,340,819 B1

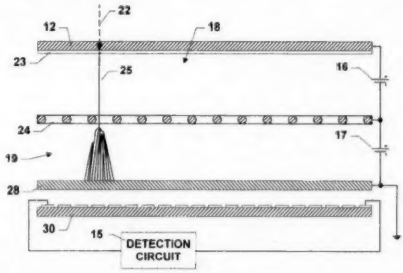
READOUT STRUCTURE AND TECHNIQUE FOR ELECTRON CLOUD AVALANCHE DETECTORS

Roger D. Durst, Middleton; Sean N. Carney, Madison; Yacouba Diawara, Madison, and Rudolph Shuvalov, Madison, all of Wis., assignors to Bruker AXS, Inc., Madison, Wis.

Filed Aug. 9, 1999, Appl. No. 370,769

Int. Cl. G01J *5/28*

U.S. Cl. 250—374 **49 Claims**



1. A detection apparatus for detecting an energy signal, the apparatus comprising:

a gas electron avalanche multiplication region in which a primary electron resulting from the energy signal induces an avalanche multiplication to create an electron cloud;

a resistive layer having a detection plane upon which the electron cloud is incident; and

a readout apparatus that is capacitively coupled to the resistive layer, and that identifies, within a readout plane substantially parallel to the detection plane, locations of charge induced on the readout apparatus by interaction of the electron cloud with the resistive layer.

US 6,340,820 B1

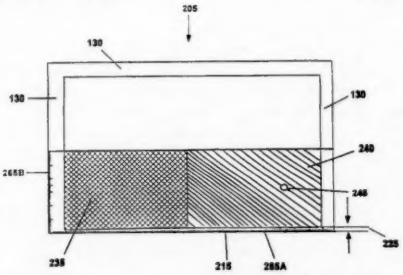
NEAR-VISIBLE LIGHT DETECTION METHOD AND APPARATUS

Katharine E. Youden; David F. Arnone, both of Mountain View; Mona Wallace, Saratoga, and Robert Shine, San Jose, all of Calif., assignors to New Focus, San Jose, Calif.

Filed Feb. 4, 1999, Appl. No. 245,612

Int. Cl. G01J *1/58*

U.S. Cl. 250—484.4 **22 Claims**



1. An apparatus for detecting near-visible frequency light, comprising:

a sensor including a near-visible to visible light conversion phosphor defining an active area, the phosphor extending to within about a first distance of a flush portion of a first edge, wherein the active area comprises an aperture; and

a covering having a thickness, the covering adapted to substantially protect the phosphor from degradation, the first distance corresponding approximately to the thickness of the covering.

US 6,340,821 B1

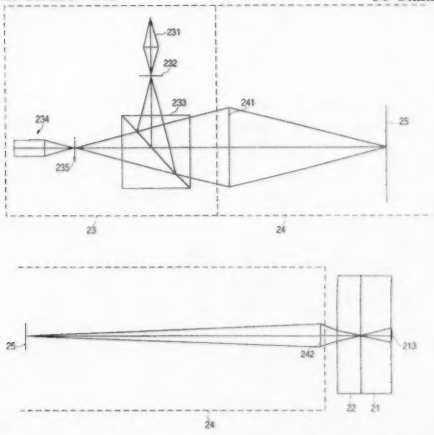
PROJECTION EYEPIECE AND METHOD FOR ALIGNING PATTERN AREAS ON OPPOSING SUBSTRATE

Daniel M. Brown, Madison, Ala., assignor to Mems Optical, Inc., Huntsville, Ala.

Continuation of application No. 09/196,784, filed on Nov. 20, 1998, now Pat. No. 6,222,198. This application May 28, 1999, Appl. No. 321,730.

Int. Cl. G01B *11/00*

U.S. Cl. 250—548 **30 Claims**



1. A projection eyepiece for a device that detects alignment between positions on opposing surfaces of a substrate having a reflective surface on at least a portion of one surface side, the eyepiece comprising:

a reticle source structured and arranged to project a reticle image toward the substrate; and

a detection device structured and arranged to receive a reflection of the reticle image from the reflective surface and to determine alignment of the positions on opposing surfaces of the substrate by comparing the projected reticle image to the received reflection.

US 6,340,822 B1

ARTICLE COMPRISING VERTICALLY NANO-INTERCONNECTED CIRCUIT DEVICES AND METHOD FOR MAKING THE SAME

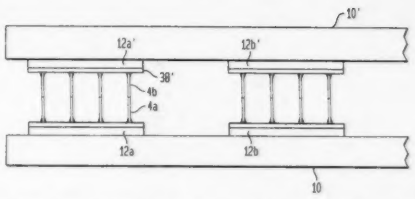
Walter L. Brown, Berkeley Heights; Sungho Jin, Millington, and Wei Zhu, Warren, all of N.J., assignors to Agere Systems Guardian Corp., Orlando, Fla.

Filed Oct. 5, 1999, Appl. No. 426,457

Int. Cl. H01L *29/06;31/0328*

U.S. Cl. 257—25 **6 Claims**

1. An article having a circuit device comprising at least two circuit layers and a plurality of substantially parallel and equi-length nanowires perpendicularly disposed and electrically interconnecting the at least two circuit layers, wherein each one of the



plurality of nanowires has a diameter of less than 500 nm and is bonded to at least one of the two circuit layers by metallic solder bonding.

US 6,340,823 B1

SEMICONDUCTOR WAFER HAVING A MULTI-TEST CIRCUIT, AND METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE INCLUDING MULTI-TEST PROCESS

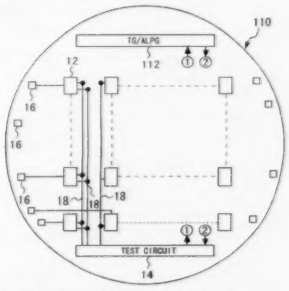
Osamu Kitade, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1998, Appl. No. 215,200

Claims priority, application Japan, Jul. 17, 1998, 10-203918

Int. Cl. H01C *23/58*

U.S. Cl. 257—48 **6 Claims**



1. A semiconductor wafer comprising:

a plurality of chips formed on a surface of the semiconductor wafer; and

a multi-test circuit for testing the plurality of chips formed on the surface of the semiconductor wafer, spaced apart from the plurality of chips, the multi-test circuit including:

a test circuit including input pads connected to terminals of the plurality of chips, and

a plurality of output pads connected to respective output terminals of the plurality of chips,

wherein the test circuit and the output pads are provided in a peripheral area of the surface of the semiconductor wafer.

US 6,340,824 B1

SEMICONDUCTOR LIGHT EMITTING DEVICE INCLUDING A FLUORESCENT MATERIAL

Satoshi Komoto, Suginami-ku; Koichi Nitta; Nobuhiro Suzuki, both of Yokohama; Kuniaki Konno, Kitakyushu; Hideto Sugawara, Kawasaki, and Chisato Furukawa, Atsugi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Aug. 31, 1998, Appl. No. 143,905

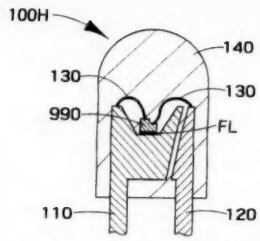
Claims priority, application Japan, Sep. 1, 1997, 9-236257; Sep. 2, 1997, 9-237448; Sep. 2, 1997, 9-237492

Int. Cl. H01L *33/00*

U.S. Cl. 257—99 **32 Claims**

1. A semiconductor light emitting device comprising:

a packaging member;



a semiconductor light emitting element packaged on said packaging member to emit primary light having a first wavelength; and

an adhesive layer fixing said light emitting element to said packaging member, said adhesive layer containing a fluorescent material absorbing said primary light emitted from said light emitting element and emitting secondary light having a second wavelength different from said first wavelength.

US 6,340,825 B1

METHOD OF DESIGNING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

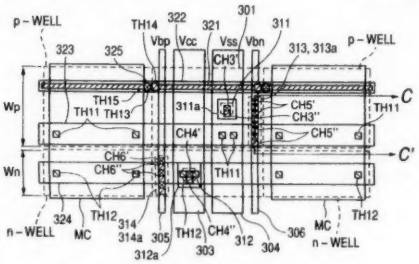
Ryuji Shibata, Higashiyamato, and Shigeru Shimada, Hoya, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1998, Appl. No. 131,393

Claims priority, application Japan, Aug. 21, 1997, 9-224560; Dec. 9, 1997, 9-338337

Int. Cl. H01L *27/092;27/118*

U.S. Cl. 257—207 **53 Claims**



1. A semiconductor integrated circuit device comprising:

substrate potential variable cells formed on a first n well region and a first p well region, and arranged in a first direction,

said first n well region arranged, in a second direction perpendicular to said first direction, adjacent to said first p well region, and

said substrate potential variable cells including a first, a second, a third and a fourth power supply line;

substrate potential fixed cells formed on a second n well region and a second p well region, and arranged in a third direction,

said second n well region arranged, in a fourth direction perpendicular to said third direction, adjacent to said second p well region,

said substrate potential fixed cells including a fifth and a sixth power supply line,

said first power supply line extending, in said first direction, on said first p well region and electrically connected to said first p well region such that either a first voltage or a second voltage is supplied to said first p well region,

said second power supply line extending, in said first direction, on said first p well region and electrically connected to transistors of said substrate potential variable cells to supply said second voltage thereto,

said third power supply line extending, in said first direction, on said first n well region and electrically connected to said first n well region such that either a third voltage or a fourth voltage is supplied to said first n well region,

said fourth power supply line extending, in said first direction, on said first n well region and electrically connected to transistors of said substrate potential variable cells to supply said fourth voltage thereto,

said fifth power supply line extending, in said third direction, on said second p well region and electrically connected to transistors of said substrate potential fixed cells to supply said second potential thereto,

wherein said second voltage is supplied to said second p well region; and

said sixth power supply line extending, in said third direction, on said second n well region and electrically connected to transistors of said substrate potential fixed cells to supply said fourth voltage thereto,

wherein said fourth voltage is supplied to said second n well region,

wherein said second power supply line and said fourth power supply line are arranged, in said second direction, between said first power supply line and said third power supply line, and

wherein a width, in said second direction, of said first n well region and said first p well region is greater than a width, in said fourth direction, of said second n well region and said second p well region; and

a substrate bias control circuit for selectively supplying said first and said third voltage to said substrate potential variable cells.

US 6,340,826 B1

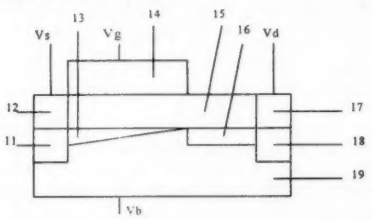
INFRA-RED LIGHT EMITTING SI-MOSFET

Agisilaos Iliadis, 2705 Falling Brook Terr., Adelphi, Md. 20783

Continuation-in-part of application No. 09/050,211, filed on Mar. 30, 1998, now abandoned. This application Mar. 27, 2000, Appl. No. 534,569.

Int. Cl. H01L *31/062;27/15*

U.S. Cl. 257—292 **9 Claims**



1. A light emitting field effect transistor (FET) comprising:

only one source, only one gate and only one drain;

a semiconductor substrate of first semiconductivity type of indirect bandgap semiconductor;

said source of second semiconductivity type formed in said substrate;

said drain of said second semiconductrivity type formed in said substrate and separated from said source by a channel;

said gate overlaying said channel to control the flow of current between said drain and said source;

said drain having a light emitting extension encroaching toward said channel and doped with impurity which forms a light emitting center in said indirect bandgap semiconductor to activate a light emitting process when a drain voltage is applied with a high enough electric field to generate highly energetic electrons for cathodoluminescence.

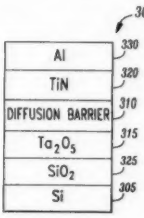
US 6,340,827 B1
DIFFUSION BARRIER FOR USE WITH HIGH DIELECTRIC CONSTANT MATERIALS AND ELECTRONIC DEVICES INCORPORATING SAME

Seungmoo Choi; Sailesh M. Merchant, and Pradip K. Roy, all of Orlando, Fla., assignors to Agere Systems Guardian Corp., Orlando, Fla.

Provisional application No. 60/115,783, filed on Jan. 13, 1999, Provisional application No. 60/115,841, filed on Jan. 13, 1999. This application Jan. 6, 2000, Appl. No. 478,647.

Int. Cl. H01L *33/00*

U.S. Cl. 257—310 **51 Claims**



1. An electronic device comprising:

a titanium nitride layer;

a high dielectric constant material; and

a diffusion barrier disposed between the titanium nitride layer and the high dielectric constant material, the diffusion barrier being configured to prevent a diffusion of oxygen from the high dielectric constant material.

US 6,340,828 B1
PROCESS FOR MANUFACTURING NONVOLATILE MEMORY CELLS WITH DIMENSIONAL CONTROL OF THE FLOATING GATE REGIONS

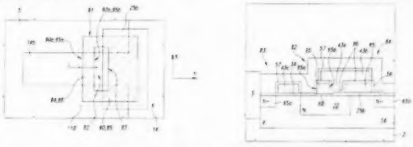
Giovanna Dalla Libera, Monza; Bruno Vajana, Bergamo, and Matteo Patelmo, Trezzo Sull'Adda, all of Italy, assignors to STMicroelectronics S.r.L., Agrate Brianza, Italy

Continuation-in-part of application No. 09/426,094, filed on Oct. 22, 1999. This application Jun. 1, 2000, Appl. No. 587,377.

Claims priority, application European Pat. Off., Oct. 23, 1998, 98830644; Jun. 4, 1999, 99830346

Int. Cl. H01L *29/778;21/336*

U.S. Cl. 257—321 **20 Claims**



1. A process for manufacturing electronic devices having floating gate nonvolatile memory cells, comprising:

defining an active area in a substrate of semiconductor material;

forming a first insulating region on top of said active area;

depositing a first dielectric material layer on top of said substrate, said first dielectric material layer comprising a tunnel area;

forming a floating gate region on top of said first dielectric material layer and on top of said first insulating region;

forming a second insulating region surrounding said floating gate region;

forming a control gate region on top of said floating gate region; and

forming conductive regions in said active area;

said step of forming a floating gate region comprising the steps of depositing a first semiconductor material layer on top of said dielectric material layer and selectively removing said first semiconductor material layer using a floating gate mask having an externally delimiting side, said floating gate mask having an opening with an internally delimiting side facing said externally delimiting side at a preset distance, and in that selectively removing comprises removing said first semiconductor material layer laterally to said externally and internally delimiting sides.

9. An electronic device comprising a nonvolatile memory element, comprising a substrate of semiconductor material housing an active area; conductive regions in said active area; a first insulating region on top of said active area; a tunnel region, of dielectric material on top of said active area and located laterally to said first insulating region; a floating gate region on top of said tunnel region and said first insulating region; a second insulating region surrounding said floating gate region; and a control gate region on top of said floating gate region, said floating gate region internally presents a hole, and said second insulating region further extends on internally delimiting walls of said hole, and said control gate region comprises a filling portion extending into and covering a bottom of said hole.

US 6,340,829 B1
SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

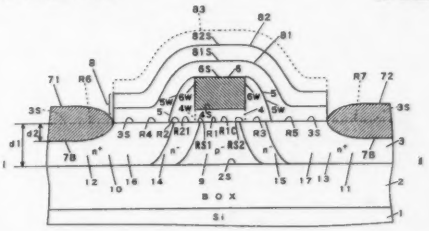
Yuuichi Hirano; Yasuo Yamaguchi, and Shigeto Maegawa, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1998, Appl. No. 173,616

Claims priority, application Japan, May 6, 1998, P10-123303

Int. Cl. H01L *27/01;29/76*

U.S. Cl. 257—347 **10 Claims**



1. A semiconductor device, comprising:

an underlying layer being an insulator;

a semiconductor layer provided on a surface of said underlying layer;

a gate insulating film provided on a first region in a surface of said semiconductor layer;

a gate electrode provided on a surface of said gate insulating film;

a side wall spacer provided only on second and third regions adjacent to said first region in said surface of said semiconductor layer, covering side surfaces of said gate insulating film and side surfaces of said gate electrode;

a first insulating film contacting only fourth and fifth regions adjacent to said second and third regions, respectively, in said surface of said semiconductor layer, on surfaces of said side wall spacer and on a surface of said gate electrode;

a second insulating film provided only on a surface of said first insulating film, being different in material from said first insulating film;

a first impurity layer of the first conductivity type extending from a center portion of said first region to the inside of said semiconductor layer;

a second impurity layer of the second conductivity type adjacent to said first impurity layer, extending from said first region, said second region, said fourth region, a sixth region externally adjacent to said fourth region to the inside of said semiconductor layer;

a third impurity layer of the second conductivity type adjacent to said first impurity layer, extending from said first region, said

third region, said fifth region, a seventh region externally adjacent to said fifth region to the inside of said semiconductor layer;

a first silicide layer provided only on said sixth region and inside said second impurity layer located below said sixth region, of which a bottom surface is located inside said second impurity layer; and

a second silicide layer provided only on said seventh region and inside third impurity layer located below said seventh region, of which a bottom surface is located inside said third impurity layer;

wherein a portion of said second and third impurity layers are formed below respective bottom surfaces of said first and second silicide layers, and said first and second silicide layers do not contact said underlying layer.

US 6,340,830 B1

SEMICONDUCTOR DEVICE AND METHOD FOR FORMING THE SAME

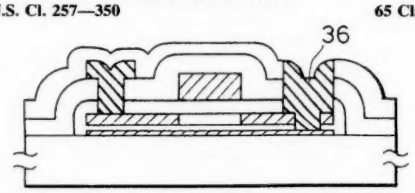
Yasuhiko Takemura, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of application No. 08/351,135, filed on Nov. 30, 1994, now Pat. No. 5,917,221, which is a continuation of application No. 08/072,127, filed on Jun. 7, 1993, now abandoned. This application Jan. 27, 1999, Appl. No. 237,854.

Claims priority, application Japan, Jun. 9, 1992, 4-174883

Int. Cl. H01L *27/01*

U.S. Cl. 257—350 **65 Claims**



1. A semiconductor device comprising:

at least a p-channel thin film transistor and an n-channel thin film transistor provided over a substrate having an insulating surface,

wherein each of said p-channel thin film transistor and said n-channel thin film transistor comprises a pair of impurity regions, a channel region provided between said impurity regions, and a gate electrode provided over said channel region with a first gate insulating film therebetween,

wherein only said n-channel thin film transistor further comprises a conductive layer below said channel region with a second insulating film therebetween, and

wherein said conductive layer is overlapped with one of said pair of impurity regions of said n-channel thin film transistor and said conductive layer is not overlapped with the other of said pair of impurity regions of said n-channel thin film transistor.

US 6,340,831 B1

PHOTODIODE AND PHOTODIODE MODULE

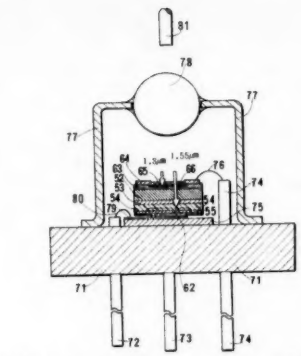
Yoshiki Kuhara; Hiromi Nakanishi, and Hitoshi Terauchi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaku, Japan

Division of application No. 09/146,101, filed on Sep. 3, 1998, now Pat. No. 6,043,550. This application Mar. 14, 2000, Appl. No. 525,222.

Claims priority, application Japan, Sep. 3, 1997, 9-256107; Jul. 21, 1998, 10-205067

Int. Cl. H01L *31/042;27/142*

U.S. Cl. 257—461 **22 Claims**



1. A photodiode module including optical transmission media and a photodiode chip for sensing light having a second wavelength of λ2 longer than a first wavelength of λ1 in an optical communication arrangement using light having wavelengths λ1 and λ2, comprising:

a first conductive-type p- or n-type semiconductor substrate;

a first conductive-type light receiving layer epitaxially grown on a surface of the semiconductor substrate;

a second conductive-type p- or n-type region formed on a part of the light receiving layer by doping a second-conductive type impurity opposed to the first conductive-type semiconductor substrate;

a pn-junction formed in the light receiving layer;

a second conductive-type electrode formed on the second conductive-type region;

a filter layer comprising n- or p-type semiconductor crystal epitaxially grown on the other surface of the substrate having a bandgap lower than λ1 light and higher than λ2 light in energy; and

a first conductive-type ring electrode including an opening part and formed on the filter layer;

wherein the λ1 light and the λ2 light pass through the opening part of the first conductive-type electrode, the λ1 light is absorbed by the filter layer and the λ2 light reaches the pn-junction of the light receiving layer, the photodiode chip is optically connected to the optical transmission media which are optical fibers, optical waveguides or optical guides via a lens or without a lens, the light emitted from the optical transmission media passes through the opening of the first conductive-type electrode of the photodiode and reaches the pn-junction of the light receiving layer.

US 6,340,832 B2

MIM CAPACITOR HAVING REDUCED CAPACITANCE ERROR AND PHASE ROTATION

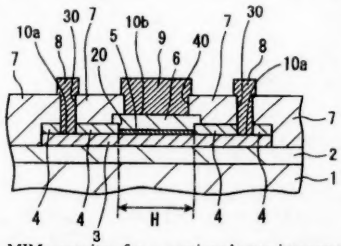
Tomokazu Kasahara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 27, 2001, Appl. No. 817,045

Claims priority, application Japan, Mar. 28, 2000, 2000-089634

Int. Cl. H01L *29/00*

U.S. Cl. 257—532 **10 Claims**



1. An MIM capacitor for a semiconductor integrated circuit device comprising:

a semiconductor substrate;
a first insulating film formed on said semiconductor substrate;
a lower electrode formed on said first insulating film;
a second insulating film formed on said lower electrode;
a first opening which penetrates said second insulating film and which reaches said lower electrode;
a capacitor insulating film formed on a portion of said lower electrode exposed by said first opening;
an upper electrode formed on said capacitor insulating film;
a third insulating film formed on said second insulating film and said upper electrode;
a second opening which penetrates said second and third insulating films and which reaches said lower electrode;
a first lead electrode which fills said second opening, which connects to a portion of said lower electrode exposed via said second opening, and which is drawn out onto the surface of said third insulating film;
a third opening which penetrates said third insulating films and which reaches said upper electrode; and
a second lead electrode which fills said third opening, which connects to a portion of said upper electrode exposed via said third opening, and which is drawn out onto the surface of said third insulating film;
wherein first lead electrode is continuously formed such that said first electrode surrounds at least three sides of said capacitor insulating film, and the width of said capacitor insulating film satisfies the following formula:

$$H<(A/F)^{1/2}$$

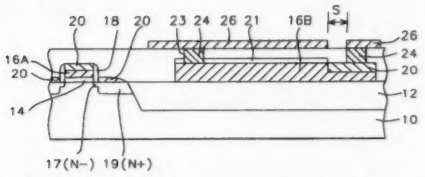
where, H designates the width of said capacitor insulating film, A designates a predetermined constant determined depending on a structure and a manufacturing process of said MIM capacitor to obtain desired admittance characteristics, and F designates maximum frequency of a signal used by said MIM capacitor.

US 6,340,833 B1

INTEGRATED CIRCUIT POLYSILICON RESISTOR HAVING A SILICIDE EXTENSION TO ACHIEVE 100 METAL SHIELDING FROM HYDROGEN INTRUSION

Ruey-Hsin Liu; Jun-Lin Tsai, and Yung-Lung Hsu, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsin-Chu, Taiwan

Division of application No. 09/152,348, filed on Sep. 14, 1998, now Pat. No. 6,165,861. This application Oct. 23, 2000, Appl. No. 693,502.
Int. Cl. H01L *29/00*
U.S. Cl. 257—536 **7 Claims**



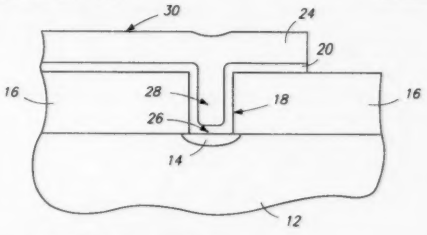
1. Polysilicon resistors on a substrate comprised of:
a substrate having field oxide regions on surface of said substrate;
a patterned polysilicon layer doped to form said polysilicon resistors having a first end and a second end on said field oxide regions
a metal silicide layer over and on said first end of said polysilicon resistors;
an interlevel dielectric layer having contact holes to said first and second ends of said polysilicon resistors, said contact holes to said first end are over and to said metal silicide layer;
metal plugs in said contact holes;
a metal layer patterned to form interconnections to said metal plugs;
said patterned metal layer extending over said polysilicon resistors to prevent hydrogen from diffusing through said interlevel dielectric layer and into said polysilicon resistors;
and spaces resulting between said interconnections over said polysilicon resistor are aligned over said silicide layer, wherein said silicide layer provides further protection from said hydrogen diffusion.

US 6,340,834 B1

METHOD OF MAKING A RESISTOR, METHOD OF MAKING A DIODE, AND SRAM CIRCUITRY AND OTHER INTEGRATED CIRCUITRY

J. Brett Rolfson, and Monte Manning, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 08/692,043, filed on Aug. 1, 1996, now Pat. No. 5,825,074, which is a division of application No. 08/528,124, filed on Sep. 14, 1995, now Pat. No. 5,567,644. This application Jun. 29, 1998, Appl. No. 106,992.
Int. Cl. H01L *29/00*
U.S. Cl. 257—538 **30 Claims**



1. An SRAM cell comprising:
a pull down transistor having a drain;
a Vcc node;
a resistor electrically coupled with the Vcc node;
the drain of the pull down transistor being electrically coupled through the resistor to the Vcc node; and
the resistor comprising:
an electrically insulative layer lying outwardly of the drain of the pull down transistor, the insulative layer having an opening defined therethrough to the pull down transistor drain; and
an elevationally elongated resistor within the opening and being in ohmic electrical contact with the pull down transistor drain, the resistor comprising two regions of semiconductive material having different conductivities and comprising portions which extend both elevationally longitudinal within the opening and laterally proximate one another, the elevationally elongated resistor being elevationally longer than it is wide within the opening; and
an outer conductive Vcc line of electrically conductive material overlying the resistor and extending to Vcc, the Vcc line being in ohmic electrical contact with the resistor, the resistor extending between the conductive line and the pull down transistor drain.

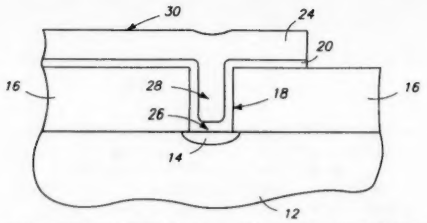
US 6,340,835 B1

METHOD OF MAKING A RESISTOR, METHOD OF MAKING A DIODE, AND SRAM CIRCUITRY AND OTHER INTEGRATED CIRCUITRY

J. Brett Rolfson, and Monte Manning, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 09/106,818, filed on Jun. 29, 1998, now abandoned, which is a continuation of application No. 08/692,043, filed on Aug. 1, 1996, now Pat. No. 5,825,074, which is a division of application No. 08/528,124, filed on Sep. 14, 1995, now Pat. No. 5,567,644. This application Oct. 7, 1999, Appl. No. 526,796.
Int. Cl. H01L *29/00*
U.S. Cl. 257—538 **6 Claims**

1. Integrated circuitry comprising:
an opening having a wall within an electrically insulative layer to a node; and



an elongated resistor within the opening and in electrical contact with the node, the resistor being elongated in a direction generally normal from the node, the resistor comprising a semiconductive material which completely fills the opening, the semiconductive material comprising a first layer disposed over the wall and a second layer laterally adjacent the first layer and spaced from the wall by the first layer, wherein the semiconductive material of the resistor has a conductivity enhancing impurity concentration gradient within the opening which varies from a low concentration at an inner elevation within the opening to a high concentration at an outer elevation within the opening.

US 6,340,836 B1

SEMICONDUCTOR DEVICE FOR RECTIFYING

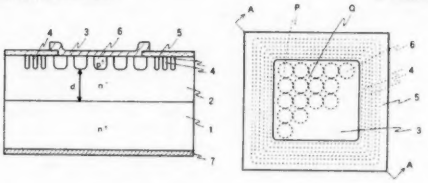
Hideaki Shikata, Kyoto, Japan, assignor to ROHM Co., Ltd., Kyoto, Japan

Filed Apr. 26, 2000, Appl. No. 559,470

Claims priority, application Japan, Apr. 26, 1999, 11-118715

Int. Cl. H01L *29/00*

U.S. Cl. 257—544 **9 Claims**



9. A semiconductor device for rectifying comprising:

a semiconductor substrate of a first conductivity type with a high impurity concentration;

a semiconductor layer of said first conductivity type with a low impurity concentration formed by epitaxial growth on said semiconductor substrate;

a plurality of semiconductor regions of a second conductivity type formed in a surface side of said semiconductor layer; and

a metal layer formed on a surface of said semiconductor layer and on a surface of said semiconductor regions, said metal layer forming a Schottky barrier with said semiconductor layer,

wherein said semiconductor regions are formed to be regularly arranged in such a manner that a plan configuration of each of said semiconductor regions on a surface of said semiconductor layer is a circularity or a polygon, and that a portion which is the furthest from a center portion of said circularity or polygon neighbors or overlaps with said circularity or polygon of an immediate adjacent semiconductor region, and

wherein said semiconductor regions are formed to be arranged so that a total area of said semiconductor regions on a surface of said semiconductor layer is between not less than two times and not more than six times an area of remaining surface of said semiconductor layer on which said semiconductor regions are not formed.

US 6,340,837 B1

SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING THE SAME

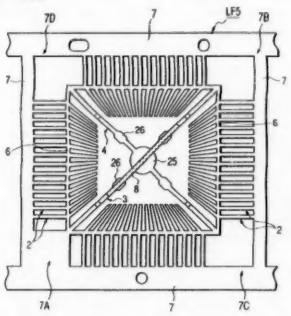
Yoshinori Miyaki, Tachikawa; Kazunari Suzuki, Tokyo, and Daisuke Omoda, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi ULSI Systems Co., Ltd., Kodaira, both of Japan

Filed Aug. 31, 1999, Appl. No. 387,052

Claims priority, application Japan, Aug. 31, 1998, 10-245406

Int. Cl. H01L *23/495*

U.S. Cl. 257—666 **15 Claims**



1. A semiconductor device comprising:

a semiconductor chip having a major surface and a rear surface opposite to said major surface, said semiconductor chip having a plurality of semiconductor elements and bonding pads formed on said major surface;

a first supporting lead and a second supporting lead for mounting said semiconductor chip, said first supporting lead extending in a first direction, said second supporting lead intersecting said first supporting lead at an intersection and extending in a second direction which is different from said first direction, said first and second supporting leads being integrally formed with each other;

a plurality of leads each having an inner lead and an outer lead which is continuously formed with said inner lead, said plurality of leads being arranged to surround said intersection of said first and second supporting leads;

a plurality of bonding wires electrically connecting said inner leads of said plurality of leads with said plurality of bonding pads, respectively; and

a resin sealing body sealing said semiconductor chip, said inner leads of said plurality of leads, said first and second supporting leads and said plurality of bonding wires;

wherein said semiconductor chip is mounted on said intersection of said first and second supporting leads,

wherein an area where said first and second supporting leads overlap with said semiconductor chip is smaller than an area of ,said semiconductor chip,

wherein said semiconductor chip is adhered to said first and second supporting leads by an adhesive layer formed between said rear surface of said semiconductor chip and said intersecting portion of said first and second supporting leads, and

wherein said adhesive layer includes a base insulating film having upper and lower sides and adhesive formed on both the upper and lower sides of said base insulating film.

US 6,340,838 B1

APPARATUS AND METHOD FOR CONTAINING SEMICONDUCTOR CHIPS TO IDENTIFY KNOWN GOOD DIES

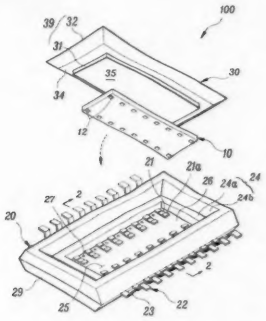
Tae Gyeong Chung, and Nam Seog Kim, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 2, 1999, Appl. No. 241,655

Claims priority, application Rep. of Korea, Apr. 8, 1998, 98-12438

Int. Cl. G01R *31/02;* **H01R** *4/58*

U.S. Cl. 257—668 **13 Claims**



1. An apparatus for containing a semiconductor device chip therein comprising:

(A) a carrier comprising:

(a) a body having a cavity which is open to a top surface of the body, the body also having a vacuum suction hole which is formed through a bottom surface of the cavity;

(b) conductive inner connection terminals on the bottom surface of the cavity; and

(c) conductive outer connection terminals which extend from the inner connection terminals and protrude outside of the body;

(B) a lid for covering the cavity; and

(C) a stopper attached to the carrier such that the stopper closes or opens the vacuum suction hole,

wherein the apparatus has an outer configuration of a semiconductor device package so that the apparatus fits into test equipment for the semiconductor device package.

US 6,340,839 B1

HYBRID INTEGRATED CIRCUIT

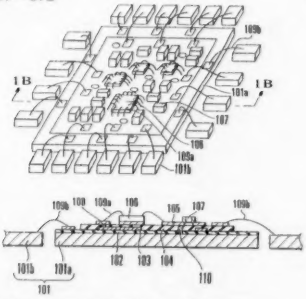
Koki Hirasawa, and Shingo Yanagihara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 22, 1999, Appl. No. 401,128

Claims priority, application Japan, Sep. 25, 1998, 10-271815

Int. Cl. H01L *23/495*

U.S. Cl. 257—672 **11 Claims**



1. A hybrid integrated circuit comprising:

a metal substrate;

a wiring structure comprised of a wiring layer formed on an upper surface of said substrate through an insulating layer;

an integrated circuit chip arranged on said wiring structure and connected to a predetermined portion of said wiring structure; and

a terminal arranged near said substrate to be insulated and isolated from said substrate and connected to said predetermined portion of said wiring structure, wherein

said insulating layer has an extending connecting portion extending from said wiring structure to be connected to said substrate, and

a fixed potential is connected to said integrated circuit chip through said extending connecting portion and said substrate.

US 6,340,840 B1

LEAD FRAME AND PRODUCTION METHOD THEREOF, AND SEMICONDUCTOR DEVICE AND FABRICATION METHOD THEREOF

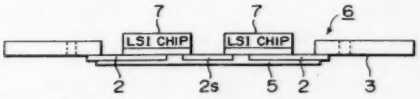
Kenji Ohsawa, and Hidetoshi Kusano, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 8, 2000, Appl. No. 733,532

Claims priority, application Japan, Dec. 14, 1999, 11-353939

Int. Cl. H01L *23/495*

U.S. Cl. 257—672 **4 Claims**



1. A lead frame comprising:

outer leads formed by a metal base member;

first interconnection film portions formed by a metal plating layer, each of which is disposed inside said outer leads in such a manner as to be connected to an inner end of one principal plane of the corresponding one of said outer leads, and at least one second interconnection film portion formed by said metal plating layer, which is disposed inside said outer leads in such a manner as not to be connected to said outer leads; and

an insulating film formed to cover planes, opposed to said outer leads, of said first and second interconnection film portions, thereby holding said first and second interconnection film portions;

wherein planes, opposed to said insulating film, of said first and second interconnection film portions are taken as semiconductor element mounting planes.

US 6,340,841 B2

BUILD-UP BOARD PACKAGE FOR SEMICONDUCTOR DEVICES

Takahiro Iijima, and Akio Rokugawa, both of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Jan. 20, 2000, Appl. No. 488,087

Claims priority, application Japan, Jan. 25, 1999, 11-015995

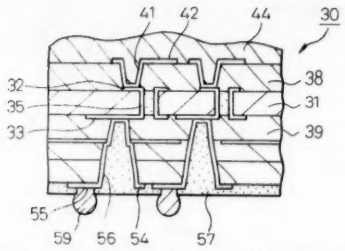
Int. Cl. H01L *23/053*

U.S. Cl. 257—700 **9 Claims**

1. A package for semiconductor devices, comprising:

a core board having a front side with a front side base wiring pattern formed thereon and a back side with a back side base wiring pattern formed thereon, the front and back side wiring patterns being electrically connected to each other through a throughhole penetrating the core board;

a front side laminate of upper wiring patterns with intermediate insulating layers intervening therebetween on the front side base wiring pattern, in which each adjacent pair of the upper wiring patterns are electrically connected to each other



through a via plated coating on a side wall of viaholes penetrating one of the intermediate insulating layers that intervenes between the adjacent pair and in which an outermost one of the upper wiring patterns has a pad for electrical connection to a semiconductor chip, wherein the pad is electrically connected, through the front side laminate of upper wiring patterns alone, to the throughhole of the core board;

a back side laminate of insulating layers on the back side base wiring pattern; and

an external connection wiring pattern including external connection terminals on the outermost one of the insulating layers of the back side laminate, wherein the external connection wiring pattern is electrically connected to the back side base wiring pattern through a via penetrating the back side laminate of insulating layers and the back side laminate of insulating layers includes no intermediate wiring patterns, except for ground or power planes, intervening between the insulating layers.

US 6,340,842 B1

SEMICONDUCTOR DEVICE IN A RECESS OF A SEMICONDUCTOR PLATE

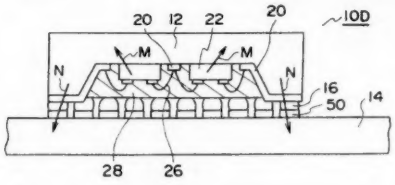
Akio Nakamura, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1998, Appl. No. 221,149

Claims priority, application Japan, Apr. 2, 1998, 10-090137

Int. Cl. H01L *23/34*

U.S. Cl. 257—724 **4 Claims**



1. A semiconductor device, comprising:

a plurality of semiconductor pellets, each being made of a semiconductor material and having bonding pads;

a plate having a first surface and a second surface opposite to the first surface, the plate being made of the semiconductor material and having at least one single, common recess formed on the first surface, the semiconductor pellets being mounted on a bottom of the single, common recess;

wirings formed on the first surface of the plate, the wirings extending from the bottom of the recess to the first surface of the plate to be coupled with the bonding pads of the respective semiconductor pellet;

bonding wires connecting the bonding pads of the respective semiconductor pellets and the wirings;

a resin sealing the semiconductor pellets, the bonding wires and a portion of the wirings; and

a plurality of electrodes formed on the first surface and coupled with the wirings respectively.

US 6,340,843 B1

PLASMA CVD DIELECTRIC FILM AND PROCESS FOR FORMING THE SAME

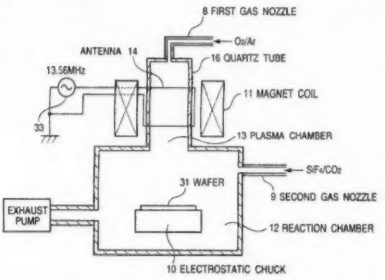
Tatsuya Usami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of application No. 09/271,718, filed on Mar. 18, 1999, now abandoned, which is a division of application No. 08/912,468, filed on Aug. 18, 1997, now Pat. No. 6,077,574. This application Sep. 14, 2000, Appl. No. 661,830.

Claims priority, application Japan, Aug. 16, 1996, 8-216286

Int. Cl. H01L *23/48;23/52;29/40*

U.S. Cl. 257—758 **4 Claims**



1. A semiconductor device including a plasma CVD interlayer dielectric film, wherein the dielectric film consists of a plasma CVD silicon oxide dielectric film doped with fluorine in the concentration range of 4.0×10^{21} atoms/cc to 1.0×10^{22} atoms/cc, and carbon in the concentration range of 3.0×10^{19} atoms/cc to 1.0×10^{21} atoms/cc.

US 6,340,844 B1

SEMICONDUCTOR DEVICE HAVING IMPROVED CONTACT HOLE STRUCTURE, AND METHOD OF MANUFACTURING THE SAME

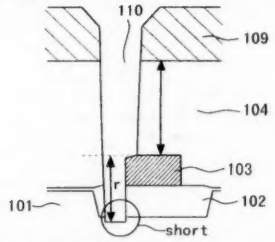
Shigenori Sakamori, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 2000, Appl. No. 606,153

Claims priority, application Japan, Jan. 12, 2000, 12-004002

Int. Cl. H01L *23/48;23/52*

U.S. Cl. 257—774 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate;

an interlayer insulation film formed on the semiconductor substrate;

a first conductor line formed at a relatively lower position within an interlayer dielectric film laid;

a second conductor line formed at a relatively higher position within the interlayer dielectric film;

an etching stopper film which is formed within the interlayer dielectric film at an intermediate position between the first and second conductor lines, said etching stopper film having an etch selectivity differing from that of the interlayer dielectric film for a predetermined etching condition, and

a contact conductor filled in a contact hole, said contact hole being formed in the interlayer dielectric film so as to extend

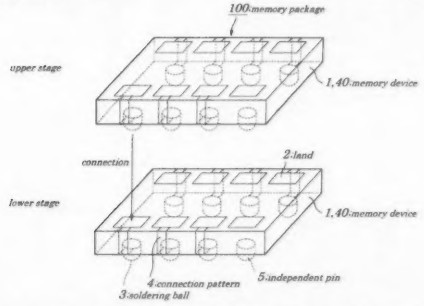
from the surface of the interlayer dielectric film to reach the second conducting line, the offset portion of the contact hole from the second conducting line is extending toward the etching stopper, and terminating at longest at the etching stopper film.

US 6,340,845 B1

MEMORY PACKAGE IMPLEMENTING TWO-FOLD MEMORY CAPACITY AND TWO DIFFERENT MEMORY FUNCTIONS

Toshiaki Oda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 21, 2000, Appl. No. 488,530
Claims priority, application Japan, Jan. 22, 1999, 11-014668
Int. Cl. H01L *23/48;23/52;29/40*
U.S. Cl. 257—777 **11 Claims**



1. A memory package for implementing two-fold memory capacity and two different memory functions on a same mounting area as required in a case of mounting in one stage comprising:

a plurality of memory devices each having a land formed at a predetermined position on a surface of said memory device on which another memory device is mounted and a connection pin formed at a bottom of said memory device which meets another land formed on another memory device in a one-to-one configuration at a position opposite to said land so as to be electrically connected to each other;

whereby said memory devices are stacked up and down in two stages so that said connection pins formed at the bottom of said upper memory device meet said lands formed at the predetermined position on the surface of said lower memory device on which said upper memory device is overlaid.

US 6,340,846 B1

MAKING SEMICONDUCTOR PACKAGES WITH STACKED DIES AND REINFORCED WIRE BONDS

Anthony J. LoBianco, Chandler; Frank J. Juskey, Phoenix; Stephen G. Shermer, Chandler; Vincent DiCaprio, Mesa, and Thomas P. Glenn, Gilbert, all of Ariz., assignors to Amkor Technology, Inc., Chandler, Ariz.

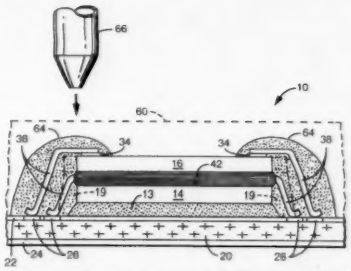
Filed Dec. 6, 2000, Appl. No. 730,721
Int. Cl. H01L *23/48;23/52;29/40*
U.S. Cl. 257—783 **21 Claims**

11. A semiconductor package with stacked dies, the package comprising:

a substrate having first and second semiconductor dies stacked on top thereof, each die having opposite top and bottom surfaces and a plurality of wire bonding pads around the periphery of the top surface thereof;

a plurality of conductive wires electrically connected between the wire bonding pads on the first and second dies and the substrate;

a first layer of a hardened adhesive attaching the bottom surface of the second die to the top surface of the first die such that



the bottom surface of the second die is superposed above the conductive wires connected to the first die without contacting the wires, and such that the first layer covers the wire bonding pads of the first die and ends of the wires connected thereto;

a hardened bead of an adhesive extending around the periphery of the first and second dies and covering the bonding pads on the top surface of the second die, ends of the conductive wires connected thereto, and the entire length of the conductive wires extending from the periphery of the dies to the substrate; and,

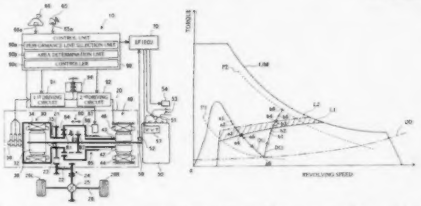
a monolithic body of an encapsulant molded over the first and second dies and the bead of adhesive.

US 6,340,847 B1

POWER OUTPUT APPARATUS AND METHOD OF CONTROLLING THE SAME

Yasutomo Kawabata, Aichi-ken; Shigeru Matsuhashi; Nobuyoshi Takagi, both of Toyota; Akihiko Kanamori, Okazaki, and Eiji Yamada, Owariasahi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 18, 2000, Appl. No. 484,795
Claims priority, application Japan, Feb. 4, 1999, 11-027615
Int. Cl. F02N *11/02;11/06;* **H02P** *9/00;9/04*
U.S. Cl. 290—40 C **16 Claims**



1. A power output apparatus comprising an engine with an output shaft, a drive shaft to which power is output, a power regulation unit that is connected with both the output shaft and the drive shaft, regulates power output from said engine with input and output of electric power, and transmits the regulated power to the drive shaft, a motor with a rotating shaft, and a linkage mechanism that selectively links the rotating shaft of said motor with either one of the output shaft and the drive shaft,

wherein a performance area, which is defined by a relationship between torque and revolving speed, is divided by a first performance line and a second performance line, which has a higher torque in a predetermined range of revolving speed than the first performance line, into a first area that mainly adjoins to the first performance line, a second area that is interposed between the first performance line and the second performance line, and a third area that mainly adjoins to the second performance line,

said power output apparatus further comprising:

a performance line selection unit that selects either one of the first performance line and the second performance line as an engine performance line that is used to determine a working point of said engine in the performance area according to a state of the linkage mechanism; and

a control unit that causes said performance line selection unit to select the first performance line as the engine performance line in the case where a working point of the drive shaft is present in the first area, and to select the second performance line as the engine performance line in the case where the working point of the drive shaft is present in the third area.

US 6,340,848 B1

ON-VEHICLE DISTRIBUTION BOX AND DISTRIBUTION SYSTEM

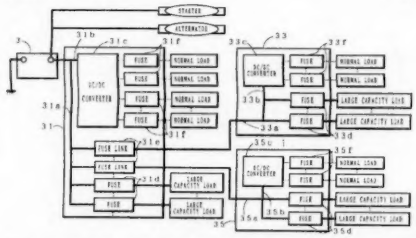
Yuji Maeda, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Mar. 27, 2000, Appl. No. 537,433

Claims priority, application Japan, May 12, 1999, 11-130981

Int. Cl. B60L *1/00;* **H02J** *1/10*

U.S. Cl. 307—10.1 **4 Claims**



1. An on-vehicle distribution box for distributing an electrical power supplied from a power source to a first voltage load operated on a first voltage and a second voltage load operated on a second voltage differed from said first voltage, the distribution box comprising:

a primary circuit of which an upstream point is connected to said power source and of which a downstream point is connected to said first load,

a first fuse means provided in said primary circuit,

a branch circuit branched upstream from said first fuse means from said primary circuit and connected to said second load at a downstream point of said branch circuit,

a DC/DC converter arranged in said branch circuit for converting the first voltage to the second voltage, and

a second fuse means arranged in said branch circuit downstream from said DC/DC converter.

US 6,340,849 B1

MEMORY MIRROR SYSTEM FOR VEHICLES

Mark E. Kramer, Zeeland, and Roger L. Veldman, Holland, both of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of application No. 09/448,690, filed on Nov. 24, 1999, now Pat. No. 6,163,083, which is a continuation of application No. 09/135,375, filed on Aug. 17, 1998, now Pat. No. 6,093,976, which is a continuation of application No. 08/818,918, filed on Mar. 17, 1997, now Pat. No. 5,796,176, which is a continuation-in-part of application No. 08/679,681, filed on Jul. 11, 1996, now Pat. No. 5,798,575. This application Dec. 15, 2000, Appl. No. 737,911.

This patent is subject to a terminal disclaimer.

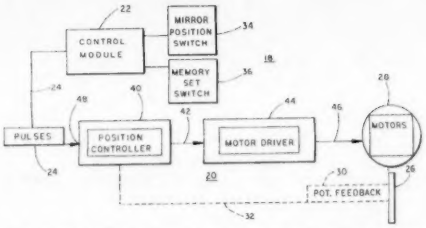
Int. Cl. H02P *1/54*

U.S. Cl. 307—10.1 **87 Claims**

1. A vehicular rearview mirror system for a vehicle having a reverse gear, said mirror system comprising:

a first rearview mirror assembly and a second rearview mirror assembly;

each of said first and second rearview mirror assemblies including a housing and a support for attaching said assembly to a vehicle;



each of said first and second rearview mirror assemblies including a reflective element and an actuator for positioning said reflective element about an axis;

each of said first and second rearview mirror assemblies including a control for operating said actuator;

said first rearview mirror assembly including a processor adapted to determine a position for the reflective element of said first rearview mirror assembly, the position of said reflective element of said first rearview mirror assembly determined by one of (i) retrieval of one of several positions stored in a memory at said first rearview mirror assembly and (ii) an indication to said processor of said first rearview mirror assembly that the vehicle has been placed in reverse gear;

said processor of said first rearview mirror assembly further adapted to determine a position for the reflective element of said second rearview mirror assembly, said position for the reflective element of said second rearview mirror assembly also determined by one of (i) retrieval of one of several positions stored in a memory at said first rearview mirror assembly and (ii) an indication to said processor of said first rearview mirror assembly that the vehicle has been placed in reverse gear; and

wherein said position for the reflective element of said second rearview mirror assembly is communicated from said first rearview mirror assembly by an interface, said interface comprising one of an analog interface, a digital interface and a direct-wired interface.

US 6,340,850 B2

VEHICLE MIRROR DIGITAL NETWORK AND DYNAMICALLY INTERACTIVE MIRROR SYSTEM

Desmond J. O'Farrell; Roger L. Veldman, and Kenneth Schofield, all of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of application No. 09/375,315, filed on Aug. 16, 1999, now Pat. No. 6,175,164, which is a continuation of application No. 09/138,919, filed on Aug. 24, 1998, now Pat. No. 5,959,367, which is a continuation of application No. 08/679,681, filed on Jul. 11, 1996, now Pat. No. 5,798,575. This application Dec. 22, 2000, Appl. No. 747,576.

This patent is subject to a terminal disclaimer.

Int. Cl. G02B *5/08*

U.S. Cl. 307—10.1 **62 Claims**

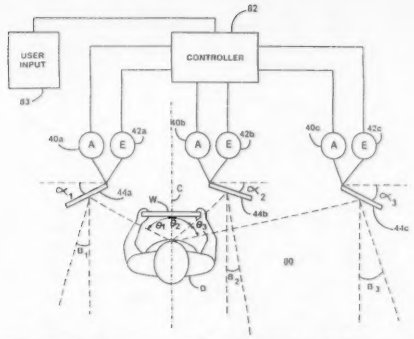
1. A vehicle rear vision system suitable for use in a vehicle equipped with a vehicle communication network, said system comprising:

an interior rearview mirror assembly and an exterior rearview mirror assembly;

said interior rearview mirror assembly including an interior electro-optical reflectance element and a first microprocessor-based control;

said exterior rearview mirror assembly including an exterior electro-optical reflectance element and a second microprocessor-based control;

said first microprocessor-based control including a control channel for controlling a partial reflectance level of said first interior electro-optical reflectance element;



said second microprocessor-based control including a control channel for controlling a partial reflectance level of said second exterior electro-optical reflectance element;

said second microprocessor-based control including at least one another control channel, said at least one another control channel operable to at least one of (i) selectively activate a heater element in heat transfer association with said second exterior electro-optical reflectance element, (ii) operate a positioning device for said second exterior electro-optical reflectance element, (iii) actuate a security light, (iv) actuate a turn signal, and (v) actuate a stop signal; and

wherein one of said first and second microprocessor-based controls at least one of (i) formats message for the vehicle communication network and (ii) decodes messages from the vehicle communication network.

US 6,340,851 B1

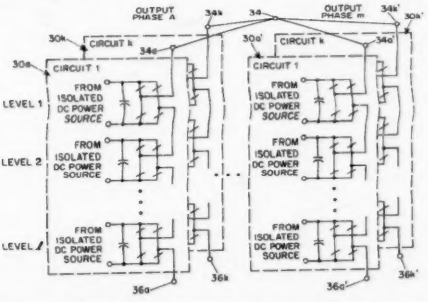
MODULAR TRANSFORMER ARRANGEMENT FOR USE WITH MULTI-LEVEL POWER CONVERTER

Peter M. Rinaldi, Mystic, Conn.; Edgar S. Thaxton, Bradford, R.I., and Gene Castles, Preston, Conn., assignors to Electric Boat Corporation, Groton, Conn.

Continuation-in-part of application No. 09/300,236, filed on Apr. 27, 1999, now Pat. No. 6,101,109, which is a continuation-in-part of application No. 09/046,076, filed on Mar. 23, 1998, now Pat. No. 5,933,339. This application Dec. 28, 1999, Appl. No. 473,492.

***Int. Cl. H02J** 1/00*

U.S. Cl. 307—82 **13 Claims**



1. A modular transformer arrangement comprising a plurality of transformer modules, each transformer module having a plurality of primary windings and a plurality of isolated secondary windings, and a power conversion arrangement having a plurality of power converters modules with separate inputs connected to receive power from the isolated secondary windings of the plurality of transformers respectively.

US 6,340,852 B1

VOLTAGE GENERATING CIRCUIT CAPABLE OF STABLY SUPPLYING POWER SUPPLY VOLTAGE LESS THAN RATED VOLTAGE

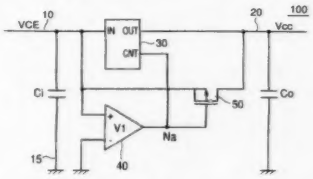
Shinichi Mizoguchi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1999, Appl. No. 437,094

Claims priority, application Japan, May 27, 1999, 11-148582

Int. Cl. G05F *5/08*

U.S. Cl. 307—125 **11 Claims**



1. A voltage generating circuit receiving an external power supply voltage and generating an operation power supply voltage of a predetermined value, comprising:

an external power supply interconnection for transmitting said external power supply voltage;

an internal power supply interconnection for transmitting said operation power supply voltage;

a control node;

an output switch circuit activated based on the voltage level of said control node for connecting said external power supply interconnection and said internal power supply interconnection;

an auxiliary voltage generating circuit, connected between said external power supply interconnection and said internal power supply interconnection and activated complementary to said output switch circuit based on the voltage level of said control node, for supplying the voltage of said predetermined value to said internal power supply interconnection; and

a voltage switch control circuit for controlling the voltage of said control node to activate said auxiliary voltage generating circuit before the voltage level of said external power supply interconnection is stabilized at an activation of said external power supply interconnection and to activate one of said output switch circuit and said auxiliary voltage generating circuit, which is selected according to a relationship between said external power supply voltage and said predetermined value after the voltage level of said external power supply interconnection is stabilized.

US 6,340,853 B1

ELECTRIC ROTATING MACHINE

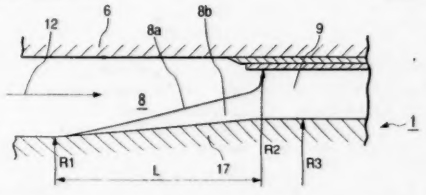
Masayuki Kaiho; Hideaki Mori, both of Chiyoda; Shigekazu Kieda, Ishioka; Ryoichi Shiobara, Hitachi; Kenichi Hattori, Hitachi, and Akiyoshi Komura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 19, 2000, Appl. No. 665,170

Claims priority, application Japan, Mar. 13, 2000, 12-073905

Int. Cl. H02K *9/00; 1/32*

U.S. Cl. 310—61 **9 Claims**



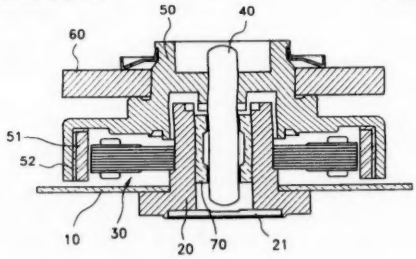
1. An electric rotating machine having axial flow passages for cooling an interior of a rotor, characterized in that inlet flow

passages provided at opposite ends of said rotor and leading to said axial flow passages are composed of convex portions formed on surfaces of a rotor spindle between and below rotor coil ends and concave grooves formed between the convex portions, and said convex portions are tapered to have a height increasing toward a downstream side.

US 6,340,854 B1
SCANNER MOTOR

Dae Hyun Jeong, Suwon-Shi, Rep. of Korea, assignor to Samsung-Electro-Mechanics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jun. 15, 2000, Appl. No. 594,359
Claims priority, application Rep. of Korea, Mar. 27, 2000, 00-15501
Int. Cl. H02K *7/08*
U.S. Cl. 310—90 **4 Claims**

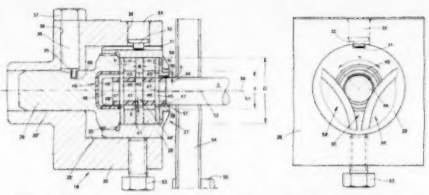


1. A scanner motor comprising:
a circuit board;
a cylindrical sleeve coupled to the circuit board at a lower end thereof, the cylindrical sleeve being attached, at the lower end thereof, with a cap adapted to cover the lower end thereof;
a stator assembly fitted around the sleeve in a vertical direction, the stator assembly including a core wound with coils;
a sintered bearing tightly fitted in the sleeve in a vertical direction, the sintered bearing having upper and lower dynamic pressure generating grooves formed at upper and lower portions of an inner peripheral surface thereof, respectively;
an annular fixed magnet fitted in an upper end of the sleeve, the fixed magnet having opposite poles vertically arranged;
a shaft vertically inserted in the sintered bearing, the shaft being spaced, at a lower end thereof, apart from the cap by a desired height;
an annular rotating magnet fitted around the shaft while having opposite poles vertically arranged, the rotating magnet facing the fixed magnet in a horizontal direction in such a fashion that the horizontally facing poles thereof have opposite polarities attracting each other, respectively; and
a rotor case coupled at an upper end thereof to an upper end of the shaft above the rotating magnet, the rotor case having a cylindrical skirt extending downwardly from the upper end thereof, the rotor case being attached with a polygon mirror at a top surface thereof and with an annular driving magnet at an inner peripheral surface of the skirt in such a fashion that a yoke is interposed between the driving magnet and the skirt.

US 6,340,855 B1
BEARING A SPINNING ROTOR OF AN OPEN-END SPINNING APPARATUS

Heinz-Georg Wassenhoven, Mönchengladbach, and Bert Schlömer, Heinsberg, both of Germany, assignors to W. Schlafhorst AG & Co., Germany

Filed Feb. 24, 2000, Appl. No. 512,561
Claims priority, application Germany, Mar. 9, 1999, 199 10 279
Int. Cl. H02K *7/09;* **D01H** *4/00*
U.S. Cl. 310—90.5 **25 Claims**

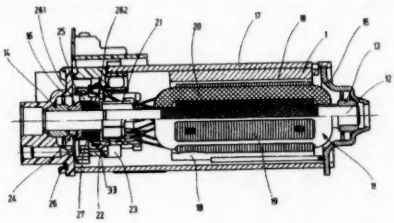


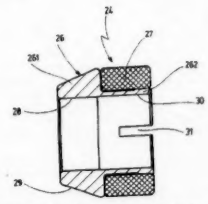
1. A bearing for shaft of a spinning rotor of an open-end spinning apparatus, the bearing comprising a support disk bearing defining a bearing nip for radially supporting the rotor shaft and a magnetic axial bearing for axially positioning the rotor shaft, the axial bearing having a static bearing component with at least two axially polarized permanent-magnetic rings bounded on opposite sides by pole disks, the permanent-magnetic rings being disposed in a bearing body such that corresponding magnetic poles face one another, and the rotor shaft having at least three ferromagnetic annuli at respective spacings from the pole disks, wherein the support disk bearing is disposed in relation to the static bearing component of the axial bearing to retain the rotor shaft in the bearing nip with a center axis of the rotor at an offset in the direction of the bearing nip from a center axis of the static bearing component, and wherein the static bearing component includes an engagement surface outwardly of the magnetic rings and the pole disks toward the support disk bearing and on the side of the support disk bearing remote from the bearing nip, the engagement surface facing the rotor shaft over an angular extent of at least about 45° of the rotor shaft and having a wear protected anti-friction surface layer, and the wear-protected surface layer being spaced a distance, x, from the rotor shaft during operation, with said distance being no more than half the smallest spacing, y, between the pole disks and the ferromagnetic annuli.

US 6,340,856 B1
ELECTRIC MOTOR

Herbert Schiller, Buehlertal, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE99/01896, § 371 Date Jun. 9, 2000, § 102(e) Date Jun. 9, 2000, PCT Pub. No. WO00/22718, PCT Pub. Date Apr. 20, 2000
PCT Filed Jun. 30, 1999, Appl. No. 581,071
Claims priority, application Germany, Oct. 9, 1998, 198 46 501
Int. Cl. H01F *7/02;* **H02K** *11/00;21/12*
U.S. Cl. 310—156.22 **21 Claims**





1. In an electric motor, having a magnet body (**24**), disposed in a manner fixed against relative rotation on a rotor shaft (**12**) for scanning the revolution and/or rpm, which body has a carrier ring (**26**), seated on the rotor shaft (**12**) with a press fit, and a multi-pole ring magnet (**27**) received by the carrier ring (**26**), an improvement

wherein the carrier ring (**26**) has a first annular portion (**261**) for the press fit on the rotor shaft (**12**) and adjacent to the first annular portion in the axial direction a second annular portion (**262**) for receiving the ring magnet (**27**), the second annular portion having an inside diameter that is greater than the outside diameter of the rotor shaft (**12**), and wherein the carrier ring (**26**) is made from a material selected from a group of solid metal and sintered metal.

US 6,340,857 B2

MOTOR HAVING A ROTOR WITH INTERIOR SPLIT-PERMANENT-MAGNET

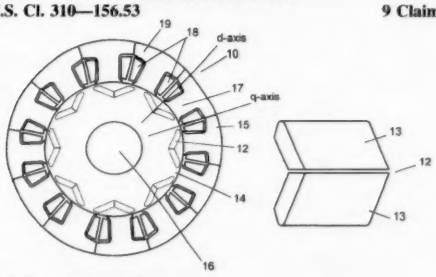
Noriyoshi Nishiyama; Tomokazu Nakamura, both of Osaka; Yasufumi Ikkai, Hyogo; Masaki Ogushi, Nara, and Yasuhiro Kondo, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 23, 1999, Appl. No. 471,375

Claims priority, application Japan, Dec. 25, 1998, 10-369167

Int. Cl. H02K *21/16*

U.S. Cl. 310—156.53 **9 Claims**



1. A motor comprising:

a rotor having an axis of rotation, and also having a first interior permanent magnet including at least two magnet pieces separated from one another in the direction of the axis of rotation by an electrical insulator having a thickness of at least 0.03 mm; and

a stator having teeth wound by concentrated windings.

US 6,340,858 B1

METHOD FOR CALIBRATING A PIEZOELECTRIC ACTUATING DRIVE

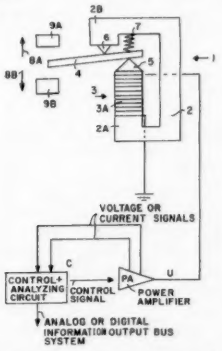
Peter Jaenker, Garching, Germany, assignor to Daimler-Chrysler AG, Germany

Filed Jan. 24, 2000, Appl. No. 490,188

Claims priority, application Germany, Jan. 22, 1999, 199 02 413

Int. Cl. H01L *41/04*

U.S. Cl. 310—328 **12 Claims**



1. A method for automatically calibrating a piezoelectric actuator, said method comprising the following steps:

(a) positioning said piezoelectric actuator so that a displacement caused by an expansion or contraction of said piezoelectric actuator encounters at least one stop,

(b) applying an energizing control signal to said piezoelectric actuator for causing said piezoelectric actuator displacement,

(c) measuring a characteristic of said piezoelectric actuator and measuring at least one point of time (t_1, t_2) when said displacement is stopped by said at least one stop at one end of said displacement,

(d) evaluating said energizing control signal and said characteristic of said piezoelectric actuator for determining a correlation between said energizing control signal and respective displaced positions of said piezoelectric actuator, and

(e) using said correlation for said calibrating or as a calibration.

US 6,340,859 B1

COLD CATHODE ELECTRON EMISSION DEVICE FOR ACTIVATING ELECTRON EMISSION USING EXTERNAL ELECTRIC FIELD

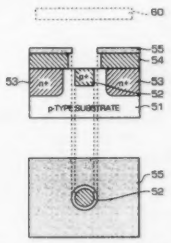
Jung-Yong Lee, and Byoung Lyong Choi, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Feb. 11, 1999, Appl. No. 248,122

Claims priority, application Rep. of Korea, Feb. 11, 1998, 98-4047; Feb. 18, 1998, 98-4929

Int. Cl. H01J *1/02;1/16;19/10;1/62;63/04*

U.S. Cl. 313—309 **9 Claims**



1. A cold cathode electron emission device which activates electron emission by applying an external electric field, the cold cathode electron emission device comprising:

a substrate of a first conductivity type which is a base of the electron emission device;

at least one active region of the first conductivity type which is formed in the upper portion of the substrate and has a predetermined alignment pattern;

a contact region of a second conductivity type which is formed in the upper portion of the substrate to surround the active region, and spaced from the active region; and

a gate region which is formed in the upper portion of the contact region electrically insulated from the contact region,

the active region being operable to form an inversion layer of the second conductivity type disposed on and around the upper portion of the active region, upon application of a voltage between the gate region and the substrate.

US 6,340,860 B1

METHOD OF MANUFACTURING ELECTRON BEAM EMITTER HAVING AN ELECTRON BEAM EMITTING AXIS COINCIDED WITH CRYSTAL AXIS

Hiroshi Ando, Hitachinaka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

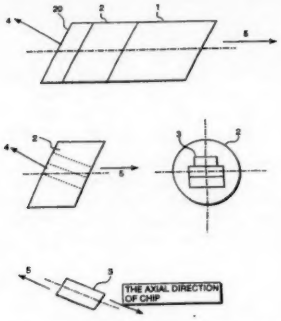
Continuation of application No. 09/056,362, filed on Apr. 7, 1998, now Pat. No. 5,969,363. This application Sep. 15, 1999, Appl. No. 396,415.

Claims priority, application Japan, Apr. 11, 1997, 9-93405

Int. Cl. H01J *1/05;1/14;1/38;1/48;17/06*

U.S. Cl. 313—311 **1 Claim**

1. An electron emitting source device made of crystal material comprising a cleavage plane, a direction perpendicular to said



cleavage plane of said crystal material being parallel to the direction of an electron beam to be emitted from said crystal material, which further comprises:

a first cutting plane which is substantially parallel to said cleavage plane, and

a second cutting plane which is substantially perpendicular to said first cutting plane, and has a longitudinal direction of an axis of the electron emitting source device coinciding with a crystal axis direction parallel to a direction of said electron beam.

US 6,340,861 B1

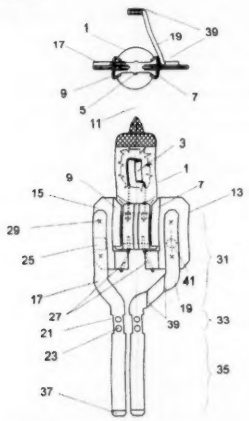
HALOGEN INCANDESCENT LAMP WITH CLAMPING SADDLES

Csaba Jakab, Szt. Donét u. 49; László Kohán, Albert u. 23, both of Hungary; Ronald Francis Scott, Paris, Ky., and Jerome John Schneider, Jr., Chagrin Falls, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 27, 1999, Appl. No. 406,447

Int. Cl. H01J *5/56*

U.S. Cl. 313—318.07 **8 Claims**



1. A halogen incandescent lamp for automotive headlight reflectors, said lamp comprising at least one incandescent coil, an envelope including a pinched portion, electrodes projecting from said pinched portion, clamping saddles made of bent metal strips and being mounted on said pinched portion, each clamping saddle having a wing extending in a plane placed across the central axis of the lamp, said electrodes each being electrically connected to a clamping saddle, lead wires being cut to shape from metal strips of appropriate thickness and having an elongated shape in the direction of the central axis of the lamp, each being mechanically and electrically connected to said wing of said clamping saddle, one of the lead wires being formed in the plane of said wings without bending, while the other lead wire being bent so that the free end thereof raises from the plane of said wings at a distance corresponding at least to the radius of said envelope.

US 6,340,862 B1

FLUORESCENT LAMP WITH LUMINESCENT MATERIAL LAYER THICKNESS ACCORDING TO THE GEOMETRICAL DISCHARGE DISTRIBUTION

Reinhard Lecheler, Neuburg an der Donau; Hermann Schweizer, Neusaess, and Michael Seibold, Munich, all of Germany, assignors to Patent-Treuhend-Gesellschaft fuer Elektrische Glüehlampen mbH, Munich, Germany

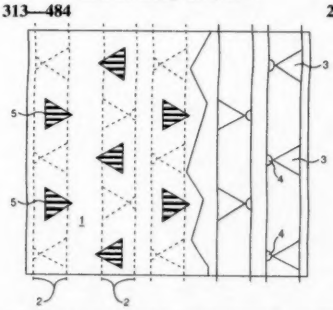
PCT No. PCT/DE99/01094, § 371 Date Dec. 16, 1999, § 102(e) Date Dec. 16, 1999, PCT Pub. No. WO99/54915, PCT Pub. Date Oct. 28, 1999

PCT Filed Apr. 9, 1999, Appl. No. 446,013

Claims priority, application Germany, Apr. 20, 1998, 198 17 477

Int. Cl. H01J *1/62;63/04*

U.S. Cl. 313—484 **20 Claims**



1. A fluorescent lamp comprising a discharge vessel filled with a gas filling, the discharge vessel having a fluorescent layer (**1**), and an electrode structure (**2**) for a dielectrically impeded discharge, the electrode structure fixing a geometric distribution of partial discharges (**3**) during operation of the lamp, the fluorescent layer (**1**) having a varying layer thickness wherein the layer thickness varies from a maximum thickness in a region containing the partial discharges to a minimum thickness in a region between the partial discharges.

US 6,340,863 B1

MICROWAVE PLASMA GENERATOR AND SYSTEM FOR DECOMPOSING ORGANIC HALIDE

Tetsuya Ikeda, and Minoru Danno, both of Yokohama, Japan, assignors to Mitsubishi Heavy Industries, Ltd., Tokoyo, Japan

Continuation of application No. PCT/JP99/05862, filed on Oct. 22, 1999. This application Jun. 23, 2000, Appl. No. 602,297.

Claims priority, application Japan, Oct. 23, 1998, 10-302994

Int. Cl. H01J *7/46*

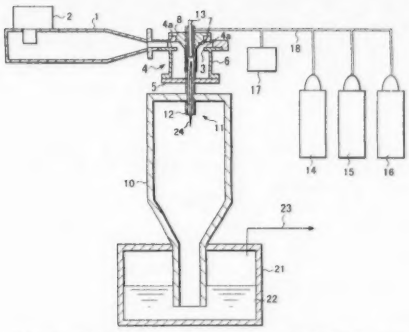
U.S. Cl. 315—111.21 **21 Claims**

5. A microwave plasma generator comprising:

a rectangular waveguide having a hole to transmit a microwave;

a cylindrical microwave resonance cavity which is connected to said rectangular waveguide by communicating with the hole and is placed such that a central axis of said resonance cavity aligns with the direction of electric field in said rectangular waveguide; and

a discharge tube which is made of a dielectric material, extends through the hole of said rectangular waveguide, and extends through said resonance cavity so as to be coaxial with the central axis of said cavity.



wherein said discharge tube has a double-tube structure including outer and inner tubes,

a sectional area of an annular gap formed between said outer and inner tubes is constant over an entire length of said inner tube, and

an end portion of said inner tube has a gas injection opening having the same diameter as an internal cavity of said inner tube.

US 6,340,864 B1

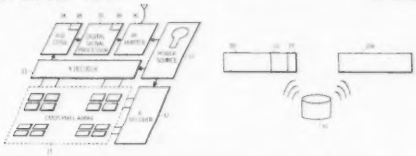
LIGHTING CONTROL SYSTEM INCLUDING A WIRELESS REMOTE SENSOR

Ihor T. Wacyk, Briarcliff Manor, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Aug. 10, 1999, Appl. No. 371,374

Int. Cl. H05B *27/02*

U.S. Cl. 315—158 **26 Claims**



1. A lighting control system comprising:

a light source including a control unit and a wireless receiver; and

a light sensor including a plurality of pixels and a wireless transmitter, which are formed by a single integrated circuit (IC),

wherein said sensor being capable of transmitting data to said light source using the wireless transmitter.

US 6,340,865 B2

FLUORESCENT DISPLAY DEVICE AND METHOD FOR DRIVING SAME

Hiroaki Kawasaki, and Yukio Ogawa, both of Chiba, Japan, assignors to Futaba Denshi Kogyo Kabushiki, Chiba, Japan

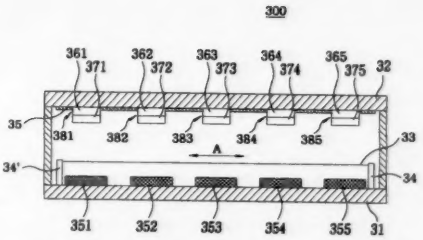
Filed Dec. 13, 2000, Appl. No. 735,730

Int. Cl. G09G *3/10*

U.S. Cl. 315—169.1 **4 Claims**

1. A fluorescent display device having control electrodes and anodes, each anode having an anode electrode and a fluorescent layer formed thereon, and a filament installed between the control electrodes and the anode electrodes,

wherein when an anode is selected to be turned on to emit light, a first voltage is applied to the filament, a second voltage is applied to the selected anode and a third voltage is applied to a control electrode facing the selected anode, the second voltage being higher than the first voltage and the third voltage is not lower than the first voltage; and wherein when



a voltage applied to a target control electrode is lower than a voltage applied to the filament by more than a predetermined voltage difference, an anode facing the target control electrode is not turned on to emit light even when the second voltage is applied thereto.

US 6,340,866 B1

PLASMA DISPLAY PANEL AND DRIVING METHOD THEREOF

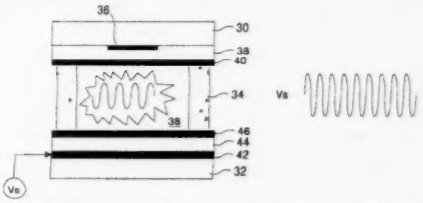
Jun Yeong Yoo, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Feb. 4, 1999, Appl. No. 244,893

Claims priority, application Rep. of Korea, Feb. 5, 1998, 98-3197; Sep. 9, 1998, 98-37086

Int. Cl. G09G *3/10*

U.S. Cl. 315—169.3 **19 Claims**



1. A plasma display panel having a plurality of discharging cells each including a discharging space formed by a barrier rib between first and second substrates and injected with a discharging gas and a plurality of electrode pairs disposed in the discharging space so as to cross each other, the panel comprising:

a first electrode that applies a data voltage to generate an addressing discharge; and

a second electrode that applies a radio frequency voltage to generate a radio frequency discharge.

US 6,340,867 B1

PLASMA DISPLAY PANEL DRIVING METHOD AND APPARATUS THEREOF

Seong Ho Kang, Daeku, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jul. 24, 2000, Appl. No. 624,353

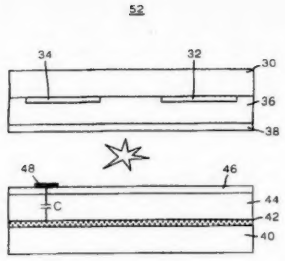
Claims priority, application Rep. of Korea, Jul. 23, 1999, P99-30084

Int. Cl. G09G *3/10*

U.S. Cl. 315—169.4 **42 Claims**

1. A plasma display panel including a plurality of cells driven with an analog image signal, each of the cells in the plasma display panel comprising:

a sustaining electrode pair arranged in parallel for a sustaining discharge;



a charge device for charging an address voltage corresponding to the image signal to initiate the sustaining discharge along with any one electrode of the sustaining electrode pair; and

a discharge space into which a discharge gas is injected to cause a gas discharge.

US 6,340,868 B1

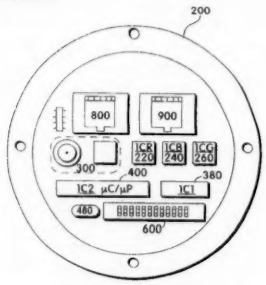
ILLUMINATION COMPONENTS

Ihor Lys; George G. Mueller, both of Boston; Frederick Marshall Morgan, Quincy, and Michael K. Blackwell, Milton, all of Mass., assignors to Color Kinetics Incorporated, Boston, Mass.

Continuation of application No. 09/213,659, filed on Dec. 17, 1998, now Pat. No. 6,211,626, which is a continuation-in-part of application No. 08/920,156, filed on Aug. 26, 1997, now Pat. No. 6,016,038, Provisional application No. 60/071,281, filed on Dec. 17, 1997, Provisional application No. 60/068,792, filed on Dec. 24, 1997, Provisional application No. 60/078,861, filed on Mar. 20, 1998, Provisional application No. 60/079,285, filed on Mar. 25, 1998, Provisional application No. 60/090,920, filed on Jun. 26, 1998. This application Jul. 27, 2000, Appl. No. 626,905.

Int. Cl. H05B *37/00;37/04*

U.S. Cl. 315—185 S **10 Claims**



1. An illumination unit comprising:

a light module having a plurality of light emitting diodes for generating light of a range of colors within a color spectrum,

a processor for controlling the amount of electrical current supplied to each light emitting diode such that a particular amount of current supplied to the light module generates a corresponding color within the color spectrum, and

a power module for providing electrical current from a power source to the light module, the power module including a connector for removably and replacably connecting the power module to the light module.

US 6,340,869 B1

METHOD FOR OPERATING DIRECT CURRENT METAL HALOGEN ARC LAMP CIRCUIT PERTAINING THERETO

Frank Werner, Berlin, Germany, assignor to Patent-Treuhand-Gesellschaft für Elektrische Glühlampen mbH, Munich, Germany

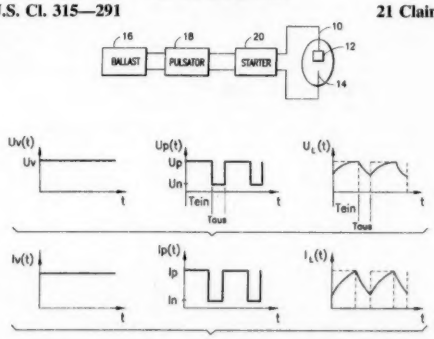
PCT No. PCT/DE98/01993, § 371 Date Feb. 3, 2000, § 102(e) Date Feb. 3, 2000, PCT Pub. No. WO99/08492, PCT Pub. Date Feb. 18, 1999

PCT Filed Jul. 16, 1998, Appl. No. 485,143

Claims priority, application Germany, Aug. 5, 1997, 197 33 806

Int. Cl. H05B *37/00*

U.S. Cl. 315—291 **21 Claims**



1. A method for operating a metal halide arc lamp having asymmetrical electrodes (**12**, **14**) and having an ionizable fill, characterized in that

only after its ignition, the metal halide arc lamp is triggered with a periodic clocked signal ($U_L(t)$), and the time period T_{min} between the onset of the drop from a maximum value and the ensuing rise in the signal amplitude is between 1 and 50 μs.

US 6,340,870 B1

LIGHTING CIRCUIT FOR DISCHARGE LAMP

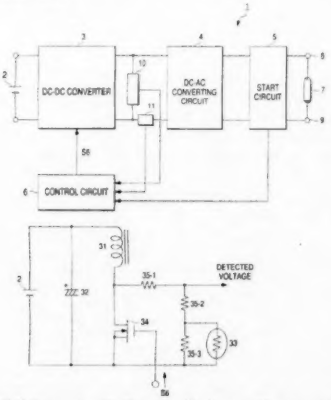
Masayasu Yamashita, and Jun Yabuzaki, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 16, 2000, Appl. No. 526,884

Claims priority, application Japan, Mar. 17, 1999, 11-071853

Int. Cl. H05B *37/02*

U.S. Cl. 315—308 **8 Claims**



2. A lighting circuit for a discharge lamp, comprising:

a DC-DC converter for converting said DC input voltage, said converter having a switching device and producing an output voltage; and,

a control circuit for controlling output voltage from said converter by controlling ON/OFF of a field effect transistor serving as said switching device, wherein

an electric current which flows in said field effect transistor is monitored by detecting voltage between a drain and a source of said field effect transistor, and wherein said control circuit turns said field effect transistor off when a value of said voltage is not smaller than a reference value, and further comprising:

a temperature compensation device for eliminating an influence of a change in temperature on the voltage between said drain and said source of said field effect transistor.

US 6,340,871 B1

HORIZONTAL-DEFLECTION CORRECTION CIRCUIT

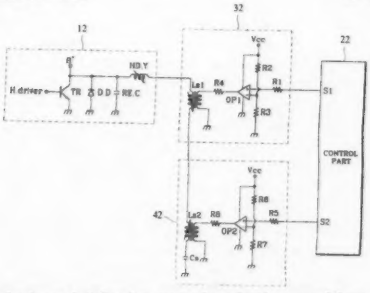
Ho-Woong Kang, Yorigin, Rep. of Korea, assignor to Samsung Electronics, Co. Ltd., Suwon, Rep. of Korea

Filed Jul. 11, 2000, Appl. No. 613,572

Claims priority, application Rep. of Korea, Dec. 23, 1999, 99 61071

Int. Cl. G09G *1/04*

U.S. Cl. 315—370 **20 Claims**



1. A horizontal-deflection correction circuit, comprising:

a horizontal deflection stage for deflecting a scan electronic beam in a horizontal direction by a sawtooth current flowing in horizontal deflection coil;

a control stage for outputting first and second control voltages having equal values when performing a linear correction and for outputting the first and second control voltages having different values when performing a S-shaped correction;

a first correction stage responsive to the first control voltage for varying an inductance of a first variable inductor connected in series to the horizontal deflection coil to correct a magnitude and a direction of the sawtooth current; and

a second correction stage responsive to the second control voltage for varying an inductance of a second variable inductor connected in series to the first variable inductor in an opposite polarity to correct the magnitude and the direction of the sawtooth current.

US 6,340,872 B1

MOVABLE BARRIER OPERATOR HAVING FORCE AND POSITION LEARNING CAPABILITY

James J. Fitzgibbon, Streamwood; John V. Moravec, Willow Springs, and Bradley Farris, Chicago, all of Ill., assignors to The Chamberlain Group, Inc., Ill.

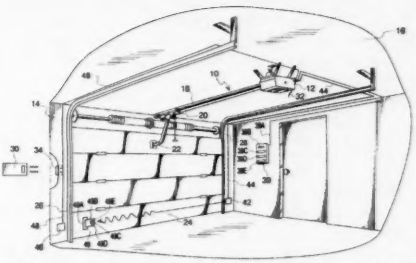
Division of application No. 08/957,316, filed on Oct. 23, 1997, which is a continuation of application No. 08/703,015, filed on Aug. 26, 1996, now abandoned, which is a division of application No. 08/467,039, filed on Jun. 6, 1995, now abandoned. This application Jul. 29, 1999, Appl. No. 363,942.

Int. Cl. H02K *7/10*

U.S. Cl. 318—9 **9 Claims**

1. A movable barrier operator comprising:

an electric motor;



a transmission connected to the electric motor to be driven thereby and for connection to a movable barrier to be moved;

a multiplexing switch having a plurality of switches and providing a different signal for each switch of said plurality that has been actuated wherein each switch of the plurality of switches is selectively coupleable to a reactance having a different value; and

a controller having a port connected to the multiplexing switch and to the electric motor to control the operation of the electric motor in response to actuation of one of the switches of the plurality of switches.

US 6,340,873 B2

SEMICONDUCTOR INTEGRATED CIRCUIT FOR BRUSHLESS MOTOR DRIVE CONTROL AND BRUSHLESS MOTOR DRIVE CONTROL APPARATUS

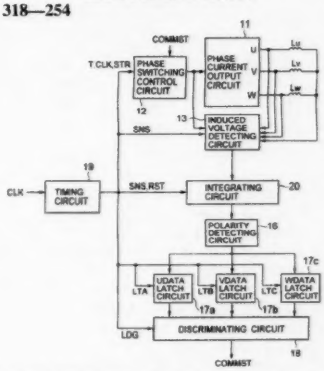
Kunio Seki, Hinode; Toshiyuki Tsunoda, Maebashi; Yasuhiko Kokami, and Kunihiro Kawauchi, both of Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 09/818,511, filed on Mar. 28, 2001. This application Jun. 29, 2001, Appl. No. 893,549.

Claims priority, application Japan, Mar. 29, 2000, 2000-090037

Int. Cl. H02P *5/40;7/00*

U.S. Cl. 318—254 **4 Claims**



1. A semiconductor integrated circuit for a drive control apparatus of a polyphase brushless motor having a plurality of field coils, comprising:

a phase current output circuit for-generating a current to pass through respective field coils of said motor;

output terminals for outputting a current to pass through field coils of respective phases of said motor, said current being generated by said phase current output circuit;

a phase switching control circuit capable of controlling said phase current output circuit to switch a current to pass from one pair of field coils to another pair of field coils of said motor for constant-speed rotation thereof and, when starting said motor, capable of controlling said phase current output circuit to conduct a pulse current, having such a duration as not to cause the rotor to react, to each of a plurality of field

coil pairs of said motor alternately in first and second, mutually opposite, directions sequentially;

an induced voltage detecting circuit, connected to said phase current output circuit, for detecting first and second voltages induced in each of said field coils of a non-conducting phase by said pulse current in said two directions;

an integrating circuit for generating a rotor position signal by integrating said first induced voltage by said pulse current in said first direction and then integrating said second induced voltage by said pulse current in said second direction at each of said field coils of the non-conducting phase;

a polarity detecting circuit for generating a polarity signal representing a polarity of a rotor position signal generated by said integrating circuit at each of said field coils of the non-conducting phase;

a memory circuit for storing polarity data representing a plurality of polarity signal generated by said polarity detecting circuit; and

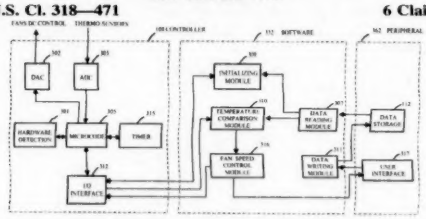
a discriminating circuit for determining a field coil pair for current conduction to start said motor on the basis of multiple pieces of polarity data stored in said memory circuit and generating a phase selection setting signal to be supplied to said phase switching control circuit, each of said circuits and said output terminals being formed on a single semiconductor chip.

US 6,340,874 B1

METHOD AND APPARATUS UTILIZED IN COMPUTER TYPE SYSTEMS FOR CONTROL OF VARIABLE SPEED FANS TO REDUCE THEIR NOISE

Knyazhitsky Vladimir, St.-Petersburg, Russian Federation, assignor to Daystream Info INC, New York, N.Y.

Filed May 30, 2000, Appl. No. 583,039
Int. Cl. F24F *7/00*
U.S. Cl. 318—471 **6 Claims**



1. Apparatus for reducing fan noise in a personal computer having at least one fan with a direct current motor which is disposed within and ventilates a zone, the noise generated by the fan being a monotone non-decreasing function of the rotational rate of the fan whereby minimizing the rotation rate of the motor for the current temperature in the ventilating zone minimizes the fan noise at that temperature, said apparatus comprising:

a thermo-sensor positioned within the zone adjacent the fan and producing a first voltage which is a measurement of the actual temperature;

a direct voltage power supply;

a digital data storage file device which contains for said fan a table listing for each of a range of discrete temperature values an associated minimum voltage which when supplied to the fan motor will minimize the rotation rate accordingly; and

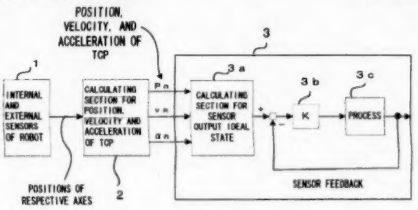
a controller connected between the fan motor and the power supply to modify the output voltage from the supply and to supply the modified voltage to the motor, the controller receiving as a first input said first voltage to read the actual temperature voltage value in the zone, said controller receiving as a second input the voltage data from said device in order to compare the actual zone temperature voltage value with the range of temperature voltage values in the file to select the nearest superior discrete temperature voltage value, the minimum voltage associated with said superior discrete voltage value being supplied by the controller to the motor to minimize the fan noise accordingly.

US 6,340,875 B1

ROBOT CONTROLLER

Atsushi Watanabe, Tokyo, and Tetsuaki Kato, Hadano, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed Dec. 22, 1999, Appl. No. 468,641
Claims priority, application Japan, Mar. 25, 1999, 11-081909
Int. Cl. G05B *19/42*
U.S. Cl. 318—568.11 **13 Claims**



1. A robot controller comprising:

motion control means for moving an operational tool mounted on a robot with respect to an object;

supply means for supplying energy to be applied to the object through the operational tool;

supply control means for issuing a supply command to said supply means; and

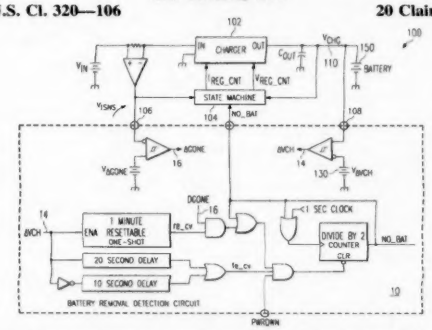
means for feeding back a parameter representing power of the energy supplied through the operational tool to alter the supply command based on the fed back parameter and a target value of the fed back parameter, the target value being dynamically determined based on a motion variable of a tool center point of the operational tool in motion obtained by said motion control means.

US 6,340,876 B1

METHOD FOR DETECTING BATTERY REMOVAL OR ABSENT BATTERY CONDITION IN A CONSTANT CURRENT CHARGER

Roland S. Saint-Pierre, Lawrenceville, Ga., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 18, 2000, Appl. No. 664,204
Int. Cl. H02J *7/00*
U.S. Cl. 320—106 **20 Claims**



1. A battery detecting system for a battery charger comprising:

a first combinatorial element having a first input for receiving current flowing through a battery charger, a second input and an output;

a second combinatorial element having a first input connected to the first combinatorial element output, a second input and an output;

a first inverter having an input for detecting a battery charger output voltage and further having an output;

a second inverter having an input connected to the first inverter output and further having an output;

a third combinatorial element having a first input connect to the second inverter output, a second input connected to the first

inverter input, and an output connected to the first combinatorial element second input;

a third inverter having an input for detecting a battery charger output voltage and further having an output;

a fourth combinatorial element having a first input connected to the third inverter output, a second input connected to the third inverter input, and an output;

a fifth combinatorial element having a first input connected to the second combinatorial element output, a second input for receiving a global reset signal, a third input connected to the fourth combinatorial element output, and an output;

a sixth combinatorial element having a first input connected to the second combinatorial element second input, a second input for receiving a global clock signal, and an output;

a first flip-flop element having a non-inverting input connected to the sixth combinatorial element output, an inverting input connected to the sixth combinatorial element output, and an output; and

a second flip-flop element having a non-inverting input connected to the first flip-flop element output, a clock input connected to the sixth combinatorial element output, an inverting input connected to the sixth combinatorial element output, and an output connected to the sixth combinatorial element first input, wherein the battery detecting system is operational to generate an output signal at the second flip-flop element output when a first signal rising edge is received at the first inverter input, and within one minute of receiving the first signal rising edge, a second signal rising edge is latched at the fifth combinatorial element first input subsequent to a falling edge of the first signal in which the first signal is low for a duration of at least 20-seconds.

US 6,340,877 B1

RECHARGEABLE CELL SUPPORT DEVICE WITH INSULATING RINGS

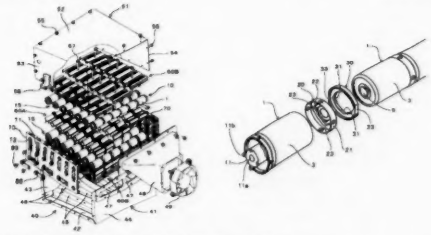
Yoshinori Mita, and Makoto Anazawa, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 2000, Appl. No. 746,074

Claims priority, application Japan, Dec. 28, 1999, 11-374386; Dec. 28, 1999, 11-374387

Int. Cl. H02J *7/00;* **H01M** *2/10*

U.S. Cl. 320—112 **14 Claims**



1. A charging element device comprising:

columnar charging element modules arranged by serially connecting cylindrical cells via an insulating ring, the module having a terminal at opposite ends thereof;

charging element module groups arranged by laterally aligning the charging element modules in parallel;

a built-up construction of the charging element modules arranged by building-up the charging element module groups in several stages;

bus bar plates disposed at opposite ends of the built-up construction of charging element modules and fitted to the terminals;

bus bars disposed outside the bus bar plate and serially connecting the terminals;

a housing in which cooling air flows and the built-up construction of the charging element modules is contained; and

mounting plates having a securing ring for holding and securing the insulating ring, the mounting plate being provided below the lowermost charging element module group, above the uppermost charging element module group, and between the intermediate charging element module groups;

wherein the mounting plates are integrally bound so as to hold and secure the insulating ring by the securing ribs;

a restriction arrangement for rotation of the insulating ring is provided to the insulating ring and the securing rib.

US 6,340,878 B1

SILICON EQUIVALENT PTC CIRCUIT

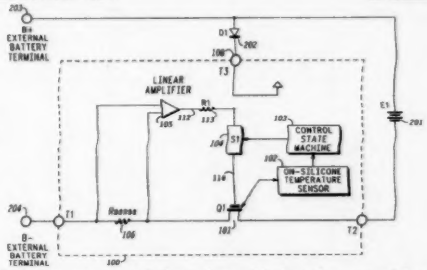
John Wendell Oglesbee, Watkinsville, Ga., assignor to Motorola, Inc., Schaumburg, Ill.

Provisional application No. 60/161,191, filed on Oct. 22, 1999.

This application Oct. 19, 2000, Appl. No. 692,576.

Int. Cl. H02J *7/04;* **H01M** *10/44;* **H02H** *5/04*

U.S. Cl. 320—150 **15 Claims**



1. A protection circuit for rechargeable batteries, comprising a silicon equivalent positive temperature coefficient device, the silicon equivalent positive temperature coefficient comprising:

at least three terminals;

a pass element coupled between a first terminal and a second terminal;

a first control circuit coupled to the pass element for regulating the impedance of the pass element; and

an on-silicon temperature sensor thermally coupled to the pass element;

wherein the on-silicon temperature sensor monitors the temperature of the pass element.

US 6,340,879 B1

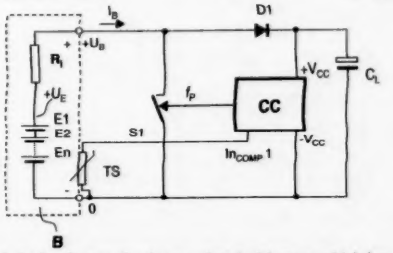
DEVICE FOR REACTIVATING AN ELECTRIC BATTERY

Bernhard Bläcker, Bochum, Germany, assignor to Nokia Mobile Phones Ltd., Espoo, Finland

Filed Feb. 3, 2000, Appl. No. 497,186

Int. Cl. H02J *7/16;* **H05B** *11/00*

U.S. Cl. 320—153 **25 Claims**



1. A device for reactivating an electrical battery which because of the effect of frost on the inside of the battery is unable to supply the required minimum amount of electric power through battery contacts to a connected consumer unit comprising:

an electronic control circuit which is connected to the battery contacts for heating the inside of the battery by its own battery current through the battery contacts, causing a direct internal heating of the electrolyte such that a minimum of electric output is provided by an external circuit without regard to availability of battery voltage.

US 6,340,880 B1

METHOD OF PROTECTING A CHARGEABLE ELECTRIC CELL

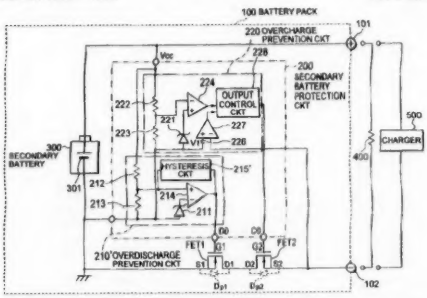
Yasuhisa Higashijima, Hadano; Yukihiro Terada, and Hiroshi Nagaoka, both of Atsugi, all of Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Nov. 9, 2000, Appl. No. 710,666

Claims priority, application Japan, Nov. 11, 1999, 11-321319; Dec. 8, 1999, 11-348535

Int. Cl. H02J *7/01*

U.S. Cl. 320—162 **21 Claims**



1. A method of protecting a secondary battery by controlling, by turning a charge control switch on and off, a charging current flowing through said secondary battery from a charger connected between external connection terminals, said secondary battery generating a battery voltage, said method comprising the steps of:

turning said charge control switch off when said battery voltage is higher than an overcharge detection threshold voltage; and

immediately turning said charge control switch on when a load for said charger is connected between said external connection terminals.

US 6,340,881 B1

ELECTRIC APPARATUS WITH SUPPLY VOLTAGE CONTROL, OPERATING IN ALTERNATING OR DIRECT CURRENT

Olivier Meyer, Baron sur Odon, France, assignor to Crouzet Automatismes, Valence, France

PCT No. PCT/FR99/02162, § 371 Date Mar. 13, 2001, § 102(e) Date Mar. 13, 2001, PCT Pub. No. WO00/16174, PCT Pub. Date Mar. 23, 2000

PCT Filed Sep. 10, 1999, Appl. No. 786,350

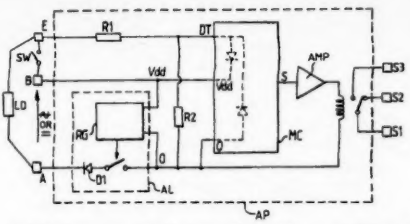
Claims priority, application France, Sep. 15, 1998, 98 11500

Int. Cl. G05F *1/40*

U.S. Cl. 323—282 **2 Claims**

1. Electrical apparatus having two external power-supply terminals (A, B) and including an electrical circuit accomplishing a defined function under the control of the closing or opening of an electrical contact (SW) capable of being linked between a first one of the external power-supply terminals (B) and a control input (E) of the apparatus, the apparatus further including:

an electronic decision circuit (CE, MC) supplied by two conductors, one of which is at reference potential and the other of which is at a low DC voltage Vdd, the decision circuit having a signal-detection input (DT) and an output (S) which is capable of taking up two states depending on the nature of the signal present on the detection input, this output controlling the said defined function of the electrical circuit,



a low-voltage DC power-supply circuit (AL), itself supplied via the two external power-supply terminals (A, B), this circuit carrying out half-wave rectification and having the conductors at the reference potential and at the voltage Vdd as its outputs,

the apparatus being characterized in that:

a) the conductor at the voltage Vdd is linked to an external power-supply terminal (B),

b) the control input (E) of the apparatus is linked by a first resistor (R1) to the detection input (DT) of the decision circuit,

c) the detection input is linked by a second resistor (R2) to the conductor at the reference potential,

d) the decision circuit includes electronic means for,

on the one hand, detecting the presence on the detection input of an alternating signal or of the reference potential, and then for putting the output (S) into a first state,

and, on the other hand, detecting the presence, on the detection input, of a DC potential other than the reference potential, and then for putting the output (S) into a second state.

US 6,340,882 B1

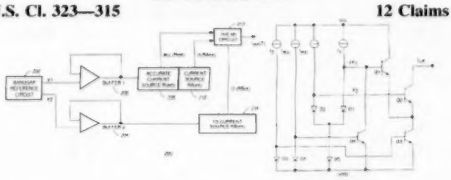
ACCURATE CURRENT SOURCE WITH AN ADJUSTABLE TEMPERATURE DEPENDENCE CIRCUIT

Paul W. Chung, and John T. Contreras, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 2000, Appl. No. 678,563

Int. Cl. G05F *3/16*

U.S. Cl. 323—315 **12 Claims**



1. A circuit for producing an accurate temperature dependent current source comprising:

a single external resistor;

an accurate temperature independent current source for producing an accurate temperature independent current dependent upon the single external resistor;

a bandgap reference circuit for generating an accurate bias current source and for generating an accurate reference voltage;

a first operational amplifier single rail type buffer and a second operational amplifier single rail type buffer to isolate the bandgap reference circuit from current generating circuits, each of the single rail type buffer having an output;

a second internal resistor; and

a second temperature dependent current source for producing a second temperature dependent current source wherein the second temperature dependent current source is connected to the output of one of the single rail type buffer, wherein the second temperature dependent current source depends upon the second internal resistor.

US 6,340,883 B1

WIDE BAND IQ SPLITTING APPARATUS AND CALIBRATION METHOD THEREFOR WITH BALANCED AMPLITUDE AND PHASE BETWEEN I AND Q

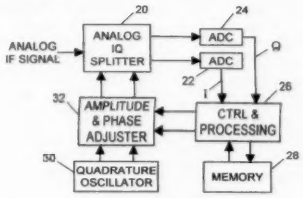
Akira Nara, and Hideaki Koyota, both of Tokyo, Japan, assignors to Sony/Tektronik Corporation, Tokyo, Japan

Filed Aug. 31, 1999, Appl. No. 386,652

Claims priority, application Japan, Sep. 3, 1998, 10-250104

Int. Cl. G01R *25/00;23/00;23/14;23/165*

U.S. Cl. 324—76.78 **20 Claims**



1. A wide band IQ splitting apparatus comprising:

a quadrature oscillator for generating a pair of quadrature signals,

an analog IQ splitter including a mixer for mixing an analog input signal with the pair of quadrature signals for splitting the analog input signal into analog I and Q signals of which bandwidths are reduced to approximately half relative to that of the analog input signal before analog to digital conversion,

an amplitude and phase adjuster for adjusting relative amplitude and relative phase of the pair of quadrature signals in order to adjust imbalance of the amplitude and the phase of the analog I and Q signals from the analog IQ splitter,

a first analog to digital converter for converting the analog I signal of which the bandwidth is approximately the half bandwidth of the analog input signal into a digital I signal,

a second analog to digital converter for converting the analog Q signal of which the bandwidth is approximately the half bandwidth of the analog input signal into a digital Q signal, and

a processor for receiving the digital I and Q signals and for compensating imbalance of amplitude and phase between the digital I and Q signals by using compensation data.

US 6,340,884 B1

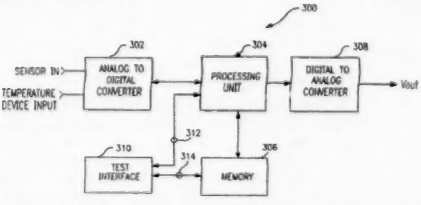
ELECTRIC CIRCUIT FOR AUTOMATIC SLOPE COMPENSATION FOR A LINEAR DISPLACEMENT SENSOR

Ronald J. Wolf, and Martin James Lynch, both of Elkhart, Ind., assignors to American Electronic Components, Elkhart, Ind.

Continuation of application No. 09/003,774, filed on Jan. 7, 1998, now Pat. No. 6,198,275, which is a continuation-in-part of application No. 08/051,412, filed on Apr. 28, 1993, now Pat. No. 5,497,081, which is a continuation-in-part of application No. 07/902,075, filed on Jun. 22, 1992, now Pat. No. 5,332,965. This application Jun. 22, 2000, Appl. No. 599,321.

Int. Cl. G01B *7/00;* **G01R** *33/025*

U.S. Cl. 324—207.21 **9 Claims**



1. An electronic circuit for automatically compensating for errors in a sensor output signal of a predetermined displacement sensor, the electronic circuit comprising:

means for receiving output signals from a linear displacement sensor;

means for storing a plurality of compensation values for said linear displacement sensor; and

means for automatically compensating the slope of said sensor output signal in a linear fashion by multiplying said sensor output signal by one of said plurality of compensation values defining a product to linearly compensate the slope of sensor output signal over a predetermined range of said sensor.

US 6,340,885 B1

METHOD AND APPARATUS FOR TESTING COMPOSITE TYPE MAGNETIC HEAD

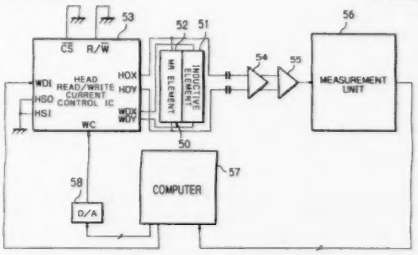
Nozomu Hachisuka; Toshiaki Maeda, and Kenji Inage, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 20, 1998, Appl. No. 196,442

Claims priority, application Japan, Oct. 2, 1998, 10-294725

Int. Cl. G01R *33/12;* **G11B** *5/455;5/39*

U.S. Cl. 324—210 **27 Claims**



10. An apparatus for testing a magnetic head having a magnetoresistive effect element with at least one shield layer and an inductive element, comprising:

a first current application means for applying a current to said inductive element, said current changing an initial magnetization state of said shield layer for said magnetoresistive effect element;

a second current application means for applying a sense current to said magnetoresistive effect element; and

measurement means for measuring output characteristics of said magnetoresistive effect element by receiving output voltage from said magnetoresistive effect element each time said current is applied to said inductive element from said first current application means while said sense current is flowing.

US 6,340,886 B1

MAGNETIC FIELD SENSOR WITH A PLURALITY OF MAGNETORESISTIVE THIN-FILM LAYERS HAVING AN END AT A COMMON SURFACE

James M. Daughton, Edina, Minn., and Arthur V. Pohm, Ames, Iowa, assignors to Nonvolatile Electronics, Incorporated, Eden Prairie, Minn.

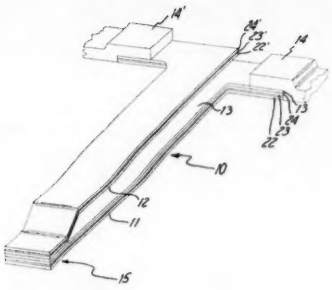
Filed Aug. 8, 1997, Appl. No. 907,561

Int. Cl. G01R *33/09;* **G11B** *5/39*

U.S. Cl. 324—252 **11 Claims**

1. A magnetic field sensing structure for providing at an output thereof representations of magnetic field changes provided therein from a source of such magnetic field changes, said sensing structure comprising:

a pair of pole structures spaced apart from one another to form a gap space therebetween each comprising a permeable material and each having an end thereof substantially in a common surface; and



a plurality of field sensor structures supported in said gap space so as to be positioned successively between said pole structures to each have an end thereof substantially in said common surface, each of said plurality of field sensor structures being formed of a plurality of magnetoresistive, anisotropic, ferromagnetic thin-film layers at least two of which are separated from one another by a nonmagnetic layer positioned therebetween, and each of said plurality of field sensor structures being electrically connected to one another adjacent said common surface.

US 6,340,887 B1

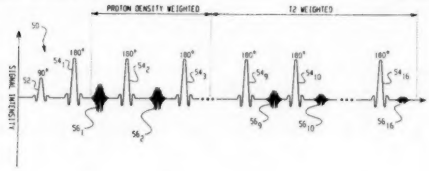
MULTIPLE CONTRAST FSE APPROACH TO BLACK BLOOD ANGIOGRAPHY WITH REDUNDANT AND SUPPLEMENTARY VASCULAR INFORMATION

Kecheng Liu; Jian Lin, both of Solon, and Paul M. Margosian, Lakewood, all of Ohio, assignors to Picker International Inc., Highland Heights, Ohio

Filed Sep. 21, 1999, Appl. No. 400,228

Int. Cl. G01V *3/00*

U.S. Cl. 324—309 **10 Claims**



3. A method for generating a black blood magnetic resonance angiograph of a body portion, said method comprising:

(a) applying a fast spin echo sequence to generate a train of N magnetic resonance echoes, where N is an integer, early echoes of the train being more heavily proton density weighted and later echoes being more heavily T2 weighted;

(b) encoding the train of magnetic resonance echoes;

(c) receiving and demodulating the train of magnetic resonance echoes into a series of data lines;

(d) sorting the data lines by proton density weighting echoes and T2 weighting echoes;

(e) reconstructing more heavily proton density weighted data lines into a proton density weighted image representation and more heavily T2 weighted data lines into a T2 weighted image representation; and,

(f) combining the proton density weighted image representation and the T2 weighted image representation to generate a black blood angiographic image representation.

US 6,340,888 B1

MAGNETIC FIELD GENERATOR FOR MRI

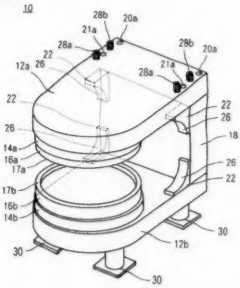
Masaaki Aoki, Takatsuki, and Shigeo Hashimoto, Saga, both of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Aug. 31, 1999, Appl. No. 386,146

Claims priority, application Japan, Sep. 2, 1998, 10-265754; Jul. 28, 1999, 11-213414

Int. Cl. G01V *3/00*

U.S. Cl. 324—319 **7 Claims**



1. A magnetic field generator for MRI comprising:

a pair of plate yokes opposed to each other with space in between,

a magnet provided in each of the opposed surfaces of the pair of plate yokes,

a column yoke connected to the pair of plate yokes for magnetic connection of the pair of plate yokes,

an enhancing member provided on inner surfaces in a connecting portion of the column yoke and the plate yoke, and

a fixing bolt attached to the enhancing member and to at least one of the column yoke and the plate yoke.

US 6,340,889 B1

BATTERY STATE MONITORING CIRCUIT AND BATTERY APPARATUS

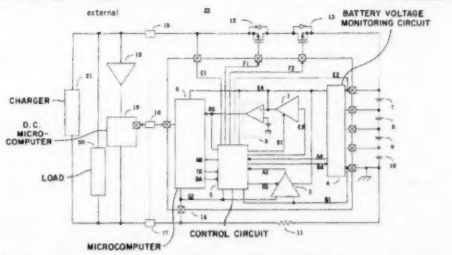
Atsushi Sakurai, Chiba, Japan, assignor to Seiko Instruments Inc., Japan

Filed Apr. 10, 2000, Appl. No. 546,196

Claims priority, application Japan, Apr. 8, 1999, 11-101668

Int. Cl. G01N *27/416*

U.S. Cl. 324—433 **12 Claims**



1. In a battery state monitoring circuit having a control circuit for controlling current limiting means to adjust a current of a plurality of series-connected secondary batteries each being chargeable and dischargeable and calculating at least a voltage of the secondary batteries: a battery voltage monitor circuit for monitoring a voltage of the secondary batteries comprising a voltage divider circuit having a plurality of resistors for dividing a total voltage of the plurality of series-connected secondary batteries into a plurality of divided voltages corresponding to each of the batteries; an output terminal for outputting the divided voltages to the control circuit; and a plurality of switches for selectively connecting respective ones of the secondary batteries and the resistors to the output terminal; wherein the control circuit controls the

switches sequentially to individually measure a divided voltage and calculates a voltage of each of the secondary batteries based on a measured divided voltage and resistance values of the resistors so that the voltage of each of the secondary batteries may be individually calculated.

US 6,340,890 B1

METHOD AND DEVICE FOR LOCATING PARTIAL DISCHARGES IN AN ELECTRIC HIGH-VOLTAGE APPARATUS

Tord Bengtsson, Västeras, and Mats Leijon, Vasteras, both of Sweden, assignors to ABB Research, Ltd., Zurich, Switzerland

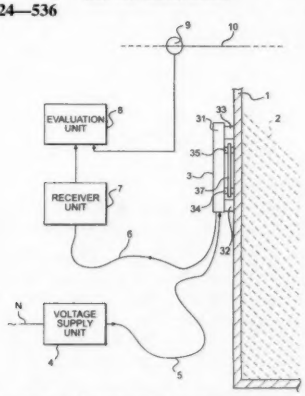
PCT No. PCT/SE95/01448, § 371 Date Aug. 6, 1997, § 102(e) Date Aug. 6, 1997, PCT Pub. No. WO96/18112, PCT Pub. Date Jun. 13, 1996

PCT Filed Dec. 4, 1995, Appl. No. 849,448

Claims priority, application Sweden, Dec. 5, 1994, 9404209

Int. Cl. G01R *31/08*

U.S. Cl. 324—536 **14 Claims**



1. A device for location of partial discharges in an electrical high voltage apparatus which is arranged in a container filled with an insulating medium said device comprising a detector unit on which at least three detectors are mounted, a distance between the individual detectors being less than a distance from the detector unit to any object in the container, the detector unit being adapted to be arranged on the outside of the container and the detectors are at the same time brought into acoustic contact with the container; and

evaluation means connected to the detectors for determining the arrival time of an acoustic wavefront originated from a partial discharge, and for determining whether the wavefront is directly or wall-propagated, in order to obtain information for locating the partial discharge.

US 6,340,891 B1

METHOD OF DIAGNOSING DETERIORATION OF THE INSULATION OF AN ELECTRIC POWER CABLE

Yukihiro Yagi, and Hideo Tanaka, both of Tokyo, Japan, assignors to Furukawa Electric Co., Ltd., Japan

PCT No. PCT/JP99/01847, § 371 Date Dec. 10, 1999, § 102(e) Date Dec. 10, 1999, PCT Pub. No. WO99/53329, PCT Pub. Date Oct. 21, 1999

PCT Filed Apr. 7, 1999, Appl. No. 445,798

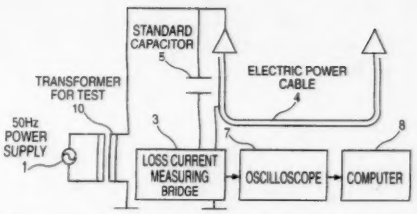
Claims priority, application Japan, Apr. 14, 1998, 10-102362; Aug. 3, 1998, 10-219230; Nov. 9, 1999, 10-317804

Int. Cl. G01R *31/02;31/12*

U.S. Cl. 324—551 **12 Claims**

1. A method of deterioration diagnosis of an insulation of an electric power cable comprising the steps of:

(a) superimposing a first voltage **V1** of frequency **f1** and a second voltage **V2** of frequency **f2** (**V1**≧**V2**) to an electric power cable,



(b) measuring a loss current component exclusive of a capacitive component of said frequency **f1**, in a current flowing between a ground and an electric power cable through an insulation,

(c) investigating frequency components contained in said loss current, and

(d) diagnosing deterioration by examining frequency components except for said frequency component **f1**, said frequency **f2** and the third harmonic of said frequency **f1**, **f2**.

US 6,340,892 B1

HAND-HELD DIGITAL MOISTURE METER WITH MEMORY AND COMMUNICATIONS

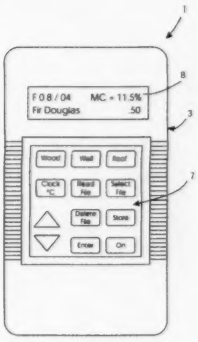
Alan Rynhart, Co. Wicklow; John Fallon, Dublin; James McIlroy, Dublin, and Dominic Southgate, Dublin, all of Ireland, assignors to Rynhart Research Limited, Delgany, Ireland

Filed Feb. 23, 2000, Appl. No. 511,326

Claims priority, application Ireland, Feb. 23, 1999, 990146; Mar. 5, 1999, 990188

Int. Cl. G01R *27/32*

U.S. Cl. 324—640 **21 Claims**



1. A moisture meter comprising:

a hand-held housing supporting a moisture sensor for contact with a material being surveyed, an output interface, and a controller including means for determining moisture content data according to signals from a moisture sensor drive circuit and for outputting said data to an output interface,

the meter including a user input interface, a non-volatile memory, and means in the controller for storing a library of parameter values of a plurality of materials, said values each including a material specific gravity value,

the controller including means for selecting stored material parameter values from said library in response to user inputs,

the controller including means for performing data processing with said selected parameter values to determine a moisture content value of a material in contact with the moisture sensor,

said data processing means including means for compensating signals received from the moisture sensor drive circuit according to said specific gravity of said material,

the controller including means for storing a plurality of data records in said non-volatile memory, each said record including data indicating a material type, date of a reading, and said moisture content value,

the meter includes an interface for communicating with a host computer, and

the controller including means for receiving an updated library of material values from a host computer via said interface and for storing said library in said non-volatile memory, and means for uploading said stored data records to a host computer via said interface.

US 6,340,893 B1

PRINTED CIRCUIT BOARD TEST APPARATUS AND METHOD

Manfred Prokopp, Wertheim-Reicholzheim, Germany, assignor to atg test systems GmbH & Co. KG, Wertheim, Germany

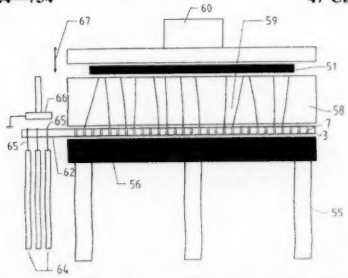
Continuation of application No. 08/956,583, filed on Oct. 23, 1997, now abandoned. This application Sep. 22, 2000, Appl. No. 667,476.

Claims priority, application Germany, Oct. 28, 1996, 196 44 725; May 2, 1997, 197 18 637

This patent is subject to a terminal disclaimer.

Int. Cl. G01R *31/02*

U.S. Cl. 324—754 **47 Claims**



1. A test apparatus for testing non-componented printed circuit boards, comprising an electronic analyzer electrically connected to a grid pattern, whereon an adapter or translator is mounted, for receiving a circuit board to be tested, said adapter or translator producing an electrical contact from circuit board test points on said circuit board to be tested to contact points of said grid pattern, wherein a first contact point and a second contact point of said contact points of said grid pattern are electrically connected to each other and to a common scanning channel of a test connection to the electronic analyzer, said first contact point and said second contact point being connected to said circuit board to be tested by said adapter or translator which provides electrical connections between the first and second contact points and the circuit board to be tested, and said contact points comprise, at least in some portions, a center-spacing of 800 μm or less.

US 6,340,894 B1

SEMICONDUCTOR TESTING APPARATUS INCLUDING SUBSTRATE WITH CONTACT MEMBERS AND CONDUCTIVE POLYMER INTERCONNECT

Warren M. Farnworth, Nampa; Alan G. Wood, Boise; Trung Tri Doan, Boise, and David R. Hembree, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

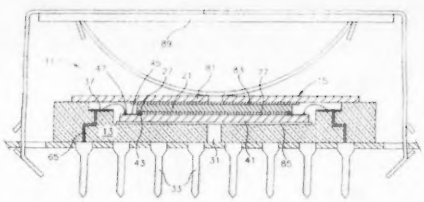
Continuation of application No. 08/584,810, filed on Jan. 11, 1996, now abandoned, which is a continuation-in-part of application No. 08/073,003, filed on Jun. 7, 1993, now abandoned, which is a continuation-in-part of application No. 07/981,956, filed on Nov. 24, 1992, now Pat. No. 5,539,324, and a continuation-in-part of application No. 07/788,065, filed on Nov. 5, 1991, now Pat. No. 5,440,240, and a continuation-in-part of application No. 07/709,858, filed on Jun. 4, 1991, now abandoned. This application Oct. 8, 1997, Appl. No. 947,087.

This patent is subject to a terminal disclaimer.

Int. Cl. G01R *31/02;1/073*

U.S. Cl. 324—755 **11 Claims**

1. An apparatus for testing a semiconductor die having a contact location comprising:



a substrate having a first surface;

a contact member on the first surface configured to make a temporary electrical connection with the contact location;

the contact member comprising a bump having a second surface spaced from the first surface and a raised portion on the second surface; and

an anisotropic conductive polymer material placed between the contact member and the contact location, the material comprising a metal filled polymer composite configured to conform to a topography of the contact location, and to deform with the raised portion causing an indentation in the contact location corresponding to the raised portion, while the metal electrically contacts the contact location and conducts through the material to the bump.

US 6,340,895 B1

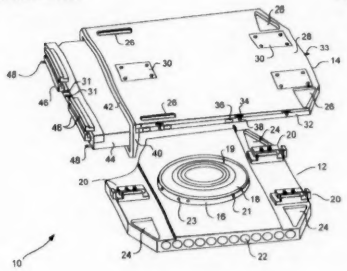
WAFER-LEVEL BURN-IN AND TEST CARTRIDGE

Frank Otto Uher, Los Altos; John William Andberg, Santa Cruz; Mark Charles Carbone, Mountain View, and Donald Paul Richmond, II, Palo Alto, all of Calif., assignors to AEHR Test Systems, Inc., Fremont, Calif.

Filed Jul. 14, 1999, Appl. No. 353,214

Int. Cl. G01R *31/02*

U.S. Cl. 324—755 **44 Claims**



1. A burn-in or test system cartridge comprising:

a first plate comprising a probe card having a region adjacent to which a substrate comprising a plurality of semiconductor dies may be positioned, the region comprising a plurality of electrical contacts which place the cartridge in electrical communication with the plurality of semiconductor dies for testing and/or burn-in of the semiconductor dies;

a second plate removably attachable to the first plate, attachment of the second plate to the first plate immobilizing the substrate positioned adjacent the platform of the first plate within the cartridge; and

a connector block comprising a plurality of connectors external to a unit formed by the first and second plates which removably mate with the burn in or test system to place the cartridge in electrical communication with the burn-in or test system for testing of the semiconductor dies.

US 6,340,896 B2

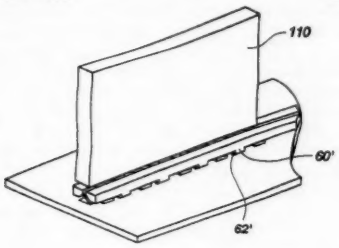
TEST SOCKET AND METHODS

Chris G. Martin, and Manny Kin F. Ma, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 09/472,406, filed on Dec. 27, 1999, now Pat. No. 6,262,583, which is a continuation of application No. 09/007,947, filed on Jan. 16, 1998, now Pat. No. 6,118,291. This application Jun. 22, 2001, Appl. No. 887,764.

Int. Cl. G01R *31/02*

U.S. Cl. 324—755 **23 Claims**



1. A test socket for use in testing a leaded semiconductor device package, comprising:

a test substrate comprising a plurality of terminals arranged correspondingly to leads of the leaded semiconductor device package;

a support member on said test substrate for supporting at least a portion of at least some leads of the leaded semiconductor device package; and

a clamp for removably securing at least some leads to corresponding terminals of said test substrate without substantially deforming the leads.

US 6,340,897 B1

PROGRAMMABLE LOGIC ARRAY INTEGRATED CIRCUIT WITH GENERAL-PURPOSE MEMORY CONFIGURABLE AS A RANDOM ACCESS OR FIFO MEMORY

Craig S. Lytle, Mountain View, and Donald F. Faria, San Jose, both of Calif., assignors to Altera Corporation, San Jose, Calif.

Continuation of application No. 08/707,705, filed on Jul. 24, 1996, now Pat. No. 6,049,223, which is a continuation-in-part of application No. 08/408,510, filed on Mar. 22, 1995, now Pat. No. 5,572,148. This application Jan. 11, 2000, Appl. No. 481,781.

This patent is subject to a terminal disclaimer.

Int. Cl. H03K *19/177*

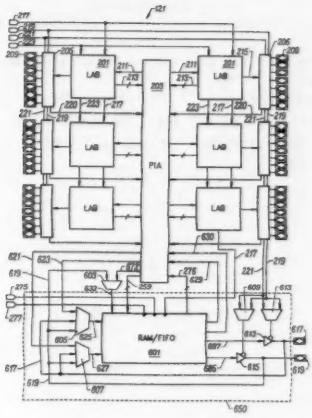
U.S. Cl. 326—40 **52 Claims**

1. A programmable logic device integrated circuit comprising:

a plurality of logic array blocks;

a programmable interconnect array configurable to interconnect signals between the plurality of logic array blocks; and

a memory block coupled to the programmable interconnect array, wherein the memory block is configurable as a random access memory in a first mode and a first-in, first-out memory



in a second mode, and the mode of the memory block is user-programmable.

US 6,340,898 B1

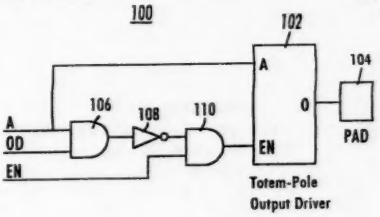
METHOD AND SYSTEM FOR SWITCHING BETWEEN A TOTEM-POLE DRIVE MODE AND AN OPEN-DRAIN DRIVE MODE

Pierre Haubursin, Sunnyvale, and Ching Yu, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 18, 1997, Appl. No. 993,122

Int. Cl. H03K *19/173*

U.S. Cl. 326—49 **11 Claims**



1. An output driver for driving an output pin on a chip, comprising:

a totem-pole driver coupled to said output pin, and

a control circuit supplied with a mode control signal and coupled to a control input of said totem-pole driver for configuring said totem-pole driver to operate in an open-drain drive mode when said mode control signal has a first logic value, and for configuring said totem-pole driver to operate in a totem-pole drive mode when said mode control signal has a second logic value,

wherein said control circuit comprises:

a first gate circuit having a first input supplied with a data input signal representing data to be supplied from said output pin, and a second input provided with said mode control signal, and

a second gate circuit having a first input responsive to an output of said first gate circuit, and a second input supplied with an output enable signal.

US 6,340,899 B1

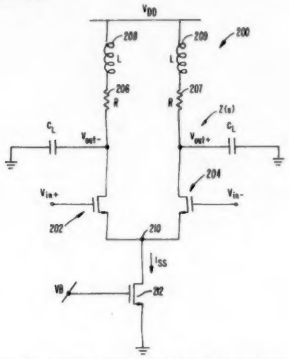
CURRENT-CONTROLLED CMOS CIRCUITS WITH INDUCTIVE BROADBANDING

Michael M. Green, Irvine, Calif., assignor to Broadcom Corporation, Irvine, Calif.

Provisional application No. 60/184,703, filed on Feb. 24, 2000. This application Jul. 6, 2000, Appl. No. 610,905.

Int. Cl. H03K *19/064;19/0175;* **G01R** *19/00*

U.S. Cl. 326—115 **9 Claims**



1. A current-controlled metal-oxide-semiconductor field-effect transistor (MOSFET) circuit fabricated on a silicon substrate, comprising:

first and second n-channel MOSFETs having their source terminals coupled to a first node, their gate terminals coupled to receive a first and second differential logic signals, respectively, and their drain terminals coupled respectively to first and second output nodes;

first and second series RL circuits respectively coupled between said first and second output nodes and a logic high level;

first and second capacitive loads (C_L) respectively coupled to said output nodes; and

a current-source n-channel MOSFET coupled between the source terminals of the first and second select n-channel MOSFETs and a logic low level.

US 6,340,900 B1

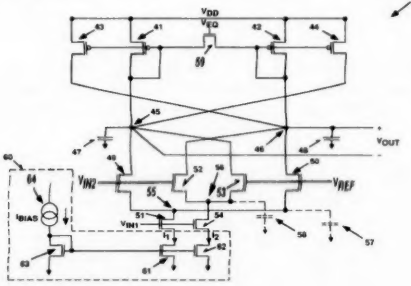
PHASE DETECTOR WITH MINIMIZED PHASE DETECTION ERROR

Kevin S. Donnelly, San Francisco; Thomas H. Lee, Cupertino, and Tsyr-Chyang Ho, San Jose, all of Calif., assignors to Rambus, Inc., Los Altos, Calif.

Continuation of application No. 08/197,641, filed on Feb. 15, 1994, now abandoned. This application Jan. 2, 1996, Appl. No. 582,045.

Int. Cl. H03K *5/26*

U.S. Cl. 327—3 **16 Claims**



1. A phase detector, comprising:

(A) a load circuit formed by transistors and coupled to (1) a power supply and (2) a first node and a second node, wherein the first and second nodes form an output of the phase detector;

(B) a capacitive circuit having (1) a first capacitor coupled to the first node and ground and (2) a second capacitor coupled to the second node and the ground;

(C) a first circuit having a first end coupled to the first node and a second end coupled to the second node, the first circuit detecting a phase difference between a first signal and a second signal, wherein the first circuit causes a first error current;

(D) a second circuit having the same circuit configuration as the first circuit but having a first end coupled to the second node and a second end coupled to the first node, wherein the second circuit causes a second error current that cancels the first error current due to cross-connection of the second circuit with respect to the first circuit, wherein each of the first and second circuits receives the first and second signals, wherein the first and second circuits are controlled by the second signal to function with respect to the first and second signals at the same time such that the second error current cancels the first error current in order for the first circuit to detect the phase difference between the first and second signals with minimized detection error.

US 6,340,901 B1

MEASUREMENT OF SIGNAL PROPAGATION DELAY USING ARBITERS

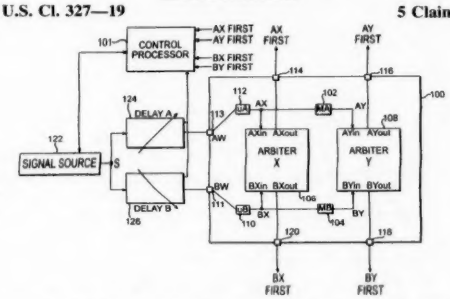
Charles E. Molnar, deceased, late of Sunnyvale, Calif., by Donna A. Molnar, legal representative, assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Continuation of application No. 08/841,651, filed on Feb. 12, 1999, now Pat. No. 6,111,436. This application Mar. 9, 2000, Appl. No. 522,176.

This patent is subject to a terminal disclaimer.

Int. Cl. H03K *5/19*

U.S. Cl. 327—19 **5 Claims**



1. A system including a circuit on an integrated circuit for use in determining differences in propagation delay using a control processor, the system comprising:

a first signal path segment having a first propagation delay;

a second signal path segment having a second propagation delay;

a first arbiter circuit coupled at a plurality of inputs to one end of the first and to one end of the second signal path segments, the first arbiter circuit including mechanisms configured to determine whether a signal transition arrives first at the one end of the first signal path segment or the one end of the second signal path segment; and

a second arbiter circuit coupled at a plurality of inputs to a second end of the first and to a second end of the second signal path segments, the second arbiter circuit including mechanisms configured to determine whether the signal transition arrives first at the one end of the second signal path segment or the one end of the second signal path segment;

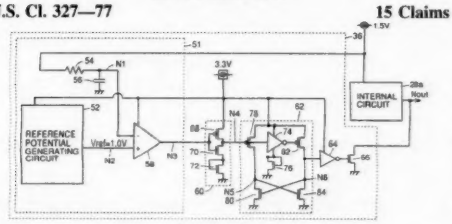
wherein the determinations from the first and second arbiter circuits are used by the control processor to output a difference in propagation delay between the first and second signal path segments.

US 6,340,902 B1

SEMICONDUCTOR DEVICE HAVING MULTIPLE POWER-SUPPLY NODES AND CAPABLE OF SELF-DETECTING POWER-OFF TO PREVENT ERRONEOUS OPERATION

Hiroshi Kato, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 2000, Appl. No. 516,780
Claims priority, application Japan, Aug. 12, 1999, 11-228393
Int. Cl. H03K 5/22
U.S. Cl. 327—77 15 Claims



1. A semiconductor device, comprising:

a first power-supply line provided to transmit a first power-supply potential;

a first internal circuit receiving and operating with said first power-supply potential from said first power-supply line for outputting a fluctuating logic signal to a first internal node;

a second power-supply line provided to transmit a second power-supply potential; and

a second internal circuit receiving and operating with said second power-supply potential from said second power-supply line, wherein

said second internal circuit includes

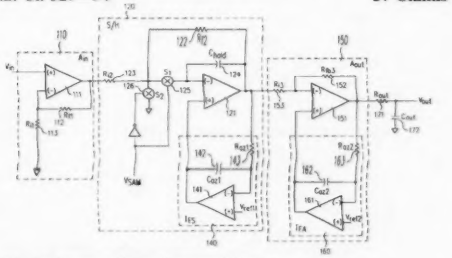
a third internal circuit for monitoring a potential of said first power-supply line to detect a power-off of said first power supply line and outputting a first sub signal that decides a potential of said first internal node instead of said fluctuating logic signal that becomes indefinite upon the power-off of said first power-supply line.

US 6,340,903 B1

AUTO-ZERO FEEDBACK SAMPLE-HOLD SYSTEM

James W. Leith, Seattle, Wash., assignor to Zilog, Ind., Campbell, Calif.

Filed May 10, 2000, Appl. No. 567,948
Int. Cl. H03K 17/00
U.S. Cl. 327—94 37 Claims



21. An integrated circuit comprising:

a high-gain sample and hold section having an externally connectable input and having an output supplying an intermediate signal, wherein the sample and hold section references the DC level of said intermediate signal to a first predetermined level independent of the DC level of an externally input analog signal through use of a feedback loop connecting to a first external capacitor and a first external resistor; and

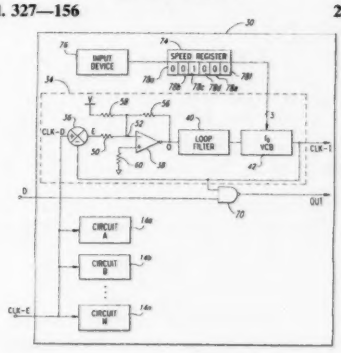
a high-gain high pass filter section having an externally accessible output signal and an input connected to said intermediate signal, wherein the filter section references the DC level of its output signal to a second predetermined level independent of the DC level of said first predetermined level through use of a feedback loop connecting to a second external capacitor and a second external resistor.

US 6,340,904 B1

METHOD AND APPARATUS FOR GENERATING AN INTERNAL CLOCK SIGNAL THAT IS SYNCHRONIZED TO AN EXTERNAL CLOCK SIGNAL

Troy A. Manning, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of application No. 08/798,226, filed on Feb. 11, 1997, now Pat. No. 5,940,608. This application May 24, 1999, Appl. No. 317,059.
Int. Cl. H03L 7/06
U.S. Cl. 327—156 23 Claims



11. A method of stobing a digital signal applied to an integrated circuit that also receives an external clock signal, the method comprising:

coupling the digital signal to a first internal circuit;

coupling the external clock signal to a second internal circuit, the external clock signal being delayed as it is coupled to the second internal circuit;

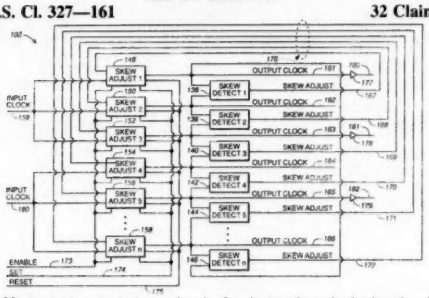
comparing the phase of the delayed external clock signal to the phase of an internal clock signal to produce a phase error signal having a magnitude corresponding to the phase comparison;

altering the magnitude of the phase error signal by a magnitude corresponding to the difference between the phase of the external clock signal and the phase of the delayed external clock signal;

generating as the internal clock signal a signal having a phase determined by the altered phase error signal; and

applying the internal clock signal to the first internal circuit, the first internal circuit being operative to strobe the digital signal responsive to the internal clock signal.

US 6,340,905 B1
DYNAMICALLY MINIMIZING CLOCK TREE SKEW IN AN INTEGRATED CIRCUIT
Richard T. Schultz, Fort Collins, Colo., assignor to LSI Logic Corporation, Milpitas, Calif.
Filed Jun. 19, 2000, Appl. No. 596,677
Int. Cl. G06F *1/04*
U.S. Cl. 327—161 **32 Claims**



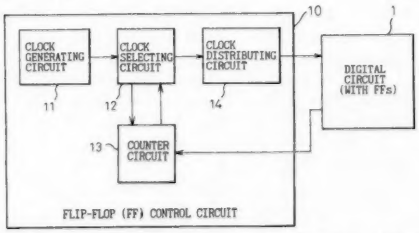
32. A clock tree deskew circuit, for deskewing clock signals of a clock tree that synchronize operation of synchronized clocked circuit components in an integrated circuit, comprising:

a plurality of clock signal inputs receiving a plurality of clock signals from the clock tree, the clock signals having timing characteristics that define a clock tree skew and being arranged in a sequential loop;

a plurality of skew adjust circuits, each skew adjust circuit corresponding to and connecting to one of the clock signals, each skew adjust circuit buffering and delaying the corresponding clock signal, and each skew adjust circuit increasing or decreasing the delay of the corresponding clock signal in response to an adjustment signal to reduce the clock tree skew; and

a plurality of skew detect circuits, each skew detect circuit corresponding to and connected to one of the skew adjust circuits, each skew detect circuit receiving a pair of the clock signals that includes the corresponding clock signal buffered and delayed by the corresponding skew adjust circuit and a next one of the clock signals in the loop, each skew detect circuit comparing the pair of clock signals to each other to determine a skew therebetween, and each skew detect circuit issuing the adjustment signal to the corresponding skew adjust circuit depending on the determination of the skew.

US 6,340,906 B1
FLIP-FLOP CONTROL CIRCUIT, PROCESSOR, AND METHOD FOR OPERATING PROCESSOR
Yasushi Mizutani, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Jun. 29, 2000, Appl. No. 605,369
Claims priority, application Japan, Nov. 11, 1999, 11-321163
Int. Cl. H03K *3/02*
U.S. Cl. 327—198 **8 Claims**



1. A flip-flop control circuit, connected to a digital circuit having a plurality of flip-flops, for supplying said digital circuit with a signal that determines the states of said plurality of flip-flops, comprising:

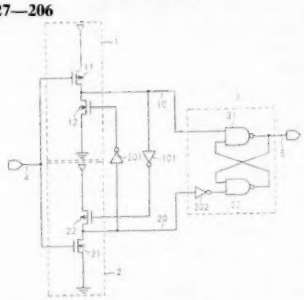
a clock generating circuit which generates a first clock pulse signal of a base frequency;

a clock selecting circuit which receives said first clock pulse signal from said clock generating circuit, and which generates from said received first clock pulse signal a high-speed processing second clock pulse signal having a frequency higher than said base frequency, and outputs said first clock pulse signal or said second clock pulse signal in accordance with a control signal input thereto;

a counter circuit which receives said first clock pulse signal or said second clock pulse signal from said clock selecting circuit, and which, when determining the states of said plurality of flip-flops, sets said control signal and starts counting said received clock pulse signal upon receiving an activation signal thereof, and clears the setting of said control signal upon expiration of a predetermined time; and

a clock distributing circuit which receives said first clock pulse signal or said second clock pulse signal from said clock selecting circuit, and which distributes said received clock pulse signal to said plurality of flip-flops.

US 6,340,907 B2
SCHMITT TRIGGER CIRCUIT HAVING INDEPENDENT THRESHOLD VOLTAGE SETTING TO PROVIDE HYSTERESIS
Mikio Aoki, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Feb. 7, 2001, Appl. No. 778,441
Claims priority, application Japan, Feb. 8, 2000, 12-030444
Int. Cl. H03K *3/12*
U.S. Cl. 327—206 **24 Claims**



1. A Schmitt trigger circuit comprising:

a first inverting amplifier circuit comprising a first p-channel transistor, with a source connected to a power supply potential side, having a first set threshold voltage level and a first load n-channel transistor with a source connected to a ground potential side, wherein the first p-channel transistor in its drain is connected to the first load n-channel transistor in its drain and an input signal is supplied and connected to a gate in the first p-channel transistor while a first input signal level decision signal is output from the first p-channel transistor on its drain side;

a second inverting amplifier circuit comprising a second n-channel transistor, with a source connected to the ground potential side, having a second set threshold voltage level and a second load p-channel transistor with a source connected to a power supply potential side, wherein the second n-channel transistor in its drain is connected to the second load p-channel transistor in its drain and said input signal is supplied and connected to a gate in the second n-channel. transistor while a second input signal level decision signal is output from the second n-channel transistor on its drain side; and

a flip-flop circuit into which the first input signal level decision signal is input as one input while the second input signal level decision signal is input as another input,

an output from the flip-flop circuit being used as an output signal, an inverted signal of the second input signal level decision signal being supplied and connected to the first load

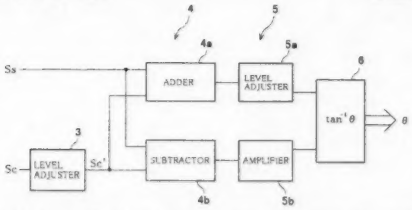
n-channel transistor at its gate, an inverted signal of the first input signal level decision signal being supplied and connected to the second load p-channel transistor at its gate.

US 6,340,908 B1

PHASE ADJUSTING CIRCUIT, SCALING SIGNAL GENERATION CIRCUIT USING PHASE ADJUSTING CIRCUIT, AND POSITION MEASURING APPARATUS USING SCALING SIGNAL GENERATION CIRCUIT

Yasuhiko Matuyama, Nagasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 20, 2000, Appl. No. 553,531
Claims priority, application Japan, Apr. 21, 1999, 11-113239
Int. Cl. H03H *11/16;31/00;5/13*
U.S. Cl. 327—238 **8 Claims**



1. A phase adjusting circuit for adjusting phases of two input signals having different phases and generating a pair of signals having a phase difference of 90 degrees based on the adjusted input signals, comprising:

an input level adjuster for adjusting the amplitude of at least one of said two input signals to a predetermined level and

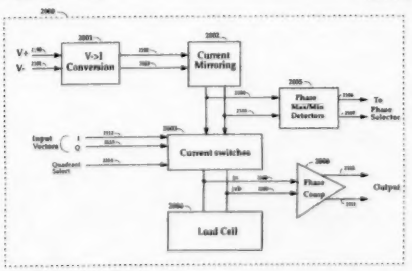
a subtractor for subtracting one input signal from the other input signal after level adjustment and outputting a difference signal having a phase difference of 90 degrees with respect to one of said input signals before level adjustment.

US 6,340,909 B1

METHOD AND APPARATUS FOR PHASE INTERPOLATION

Jared L. Zerbe, Palo Alto; Grace Tsang, Los Altos, and Clemenz L. Portmann, Cupertino, all of Calif., assignors to Rambus Inc., Los Altos, Calif.

Continuation of application No. 09/016,084, filed on Jan. 30, 1998, now Pat. No. 6,111,445. This application May 16, 2000, Appl. No. 572,405.
Int. Cl. H03H *11/16*
U.S. Cl. 327—246 **42 Claims**



1. A method of operation in a phase interpolator circuit, the method comprising:

generating a first current in relation to a control voltage using a current switch;

generating a second current in relation to the first current using a first current mirror circuit;

selectively steering the second current to a first selected node of first and second nodes to generate a first voltage transition at the first selected node, the second current being steered to the first node when a first input signal is in a first state and the second current being steered to the second node when the first input signal is in a second state;

generating a third current in relation to a second control voltage, wherein the second control voltage is complementary to the first control voltage;

generating a fourth current in relation to the third current using a second current mirror circuit; and,

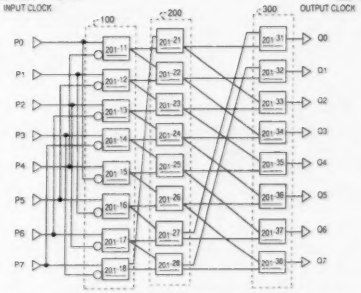
selectively steering the fourth current to a second selected node of the first and second nodes to generate a second voltage transition at the second selected node, the fourth current being steered to the first node when a second input signal is in the first state and the fourth current being steered to the second node when the second input signal is in the second state, wherein the second input signal is phase offset from the first input signal by a first phase angle.

US 6,340,910 B1

CLOCK SIGNAL CONTROL METHOD AND CIRCUIT AND DATA TRANSMITTING APPARATUS EMPLOYING THE SAME

Takanori Saeki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 26, 2000, Appl. No. 603,211
Claims priority, application Japan, Jun. 24, 1999, 11-178382
Int. Cl. G06F *1/04;* **H03K** *3/00*
U.S. Cl. 327—296 **20 Claims**



7. A clock signal control circuit in which phase errors of n pulses having different phase errors are averaged out to produce n pulses having averaged phase errors; wherein

two or more gates arranged in parallel are provided and outputs of said gates are interconnected to form a unit averaging circuit for averaging phase errors of two or more pulses input to said gates;

n of said unit averaging circuits are provided to constitute an averaging circuit set for averaging phase errors of said n pulses;

$\log_2 n$ stages of said averaging circuit sets are provided;

there being a phase inverting circuit provided at an input of each averaging circuit of a first one of said averaging circuit sets fed with said n pulses;

wherein said n pulses are supplied to two different unit averaging circuits of the first averaging circuit set; and wherein outputs of said unit averaging circuits of said first averaging circuit set are each fed to two different unit averaging circuits of a second averaging circuit set provided downstream of said first averaging circuit set.

US 6,340,911 B1

LEVEL CONVERSION CIRCUIT HAVING DIFFERENTIAL CIRCUIT EMPLOYING MOSFET

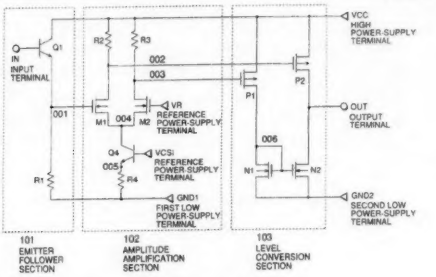
Hiroshi Kanno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 16, 1997, Appl. No. 784,775

Claims priority, application Japan, Jan. 17, 1996, 8-005905

Int. Cl. H03K *19/017*

U.S. Cl. 327—333 **6 Claims**



1. A level conversion circuit comprising:

a first bipolar transistor having a base supplied with a first reference voltage;

a first resistor having a first end connected to a first potential line and a second end connected to the emitter of said first bipolar transistor;

a second resistor having a first end connected to a second potential line and a second end;

a third resistor having a first end connected to said second potential line and a second end;

a first MOS transistor of a first channel type having a gate coupled to an input terminal, a source coupled to the collector of said first bipolar transistor and a drain coupled to the second end of said second resistor;

a second MOS transistor of said first channel type having a gate supplied with a second reference voltage, a source coupled to the collector of said first bipolar transistor and a drain coupled to the second end of said third resistor;

a third MOS transistor of a second channel type having a gate directly connected to the drain of said first MOS transistor, a source coupled to said second potential line and a drain;

a fourth MOS transistor of said second channel type having a gate directly connected to the drain of said second MOS transistor, a source coupled to said second potential line and a drain;

a fifth MOS transistor of said first channel type having a gate coupled to the drain of said fourth MOS transistor, a drain coupled to the drain of said fourth MOS transistor and a source coupled to a third potential line;

a sixth MOS transistor of said first channel type having a gate coupled to the gate of said fifth MOS transistor, a drain coupled to the drain of said third MOS transistor and a source coupled to said third potential line; and

an output terminal coupled to the drain of said third MOS transistor.

US 6,340,912 B1

SOLID STATE MAGNETRON SWITCHER

John W. Gerstenberg, Lake Elsinore, and Hung P. Van, Fullerton, both of Calif., assignors to Raytheon Company, Lexington, Mass.

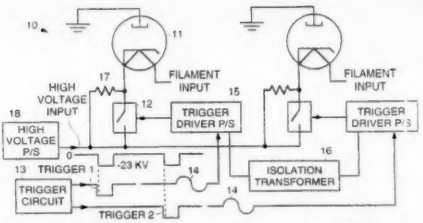
Continuation-in-part of application No. 09/109,680, filed on Jul. 2, 1998, now abandoned. This application Mar. 31, 2000, Appl. No. 540,723.

Int. Cl. H03K *17/54*

U.S. Cl. 327—506 **26 Claims**

1. Solid state switching apparatus comprising:

at least two microwave tubes;



a respective high voltage switch directly connected to each microwave tube for gating that microwave tube ON and OFF, independent of other microwave tubes;

a respective trigger circuit connected to each said switch for triggering each high voltage switch ON and OFF;

a common high voltage power supply connected to each switch for providing trigger power to each switch; and

a respective floating resistor connected across each of said switches and not connected to ground for placing each microwave tube into oscillation so that when additional voltage is applied, rise time is not an issue and for preventing voltage across the high voltage switch from exceeding the additional voltage.

US 6,340,913 B1

FILTER CIRCUIT WITH POSITIVE FEEDBACK LOOP

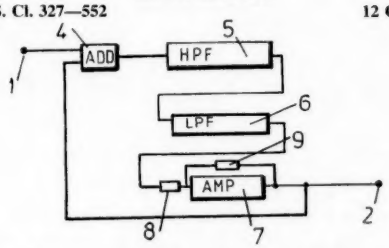
David L. Grundy, Oldham, United Kingdom, assignor to Fast Analog Solutions Limited, United Kingdom

Filed Aug. 16, 2000, Appl. No. 640,905

Claims priority, application United Kingdom, Aug. 19, 1999, 9919550

Int. Cl. H03K *5/01*

U.S. Cl. 327—552 **12 Claims**



1. A circuit comprising a phase advance circuit acting as a high pass filter, a phase retard circuit acting as a low pass filter, and an amplifier connected in series between an input and an output, a positive feedback path provided between the input and the output such that signals at the output are fed back to the input, wherein the phase advance and phase retard circuits have electrical characteristics such that interaction between the phase advance and phase retard circuits is substantially prevented.

US 6,340,914 B1

PILOT-ASSISTED AMPLIFIER LINEARIZATION CIRCUIT

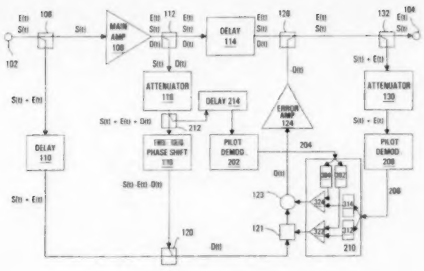
Milan Gavrilovic, Ottawa, Canada, assignor to Nortel Networks Limited, St. Laurent, Canada

Filed Apr. 5, 2000, Appl. No. 543,851

Int. Cl. H03F *3/66; 1/26*

U.S. Cl. 330—52 **42 Claims**

21. A circuit for processing an information signal in which is embedded a pilot signal, said circuit being connectable to a feed-



back configuration used for applying distortion correction to the input of an amplifier fed by the information signal, the circuit comprising:

a first demodulator, for demodulating the embedded pilot signal at a point before distortion correction is applied by said configuration, to provide a first demodulated pilot signal;

a second demodulator, for demodulating the embedded pilot signal at a second point after distortion correction is applied by said configuration, to provide a second demodulated pilot signal; and

a controller connected to the first and second demodulators and connectable to said configuration, for varying the amount of distortion correction applied by said configuration as a function of at least one parameter of the first and second demodulated pilot signals.

US 6,340,915 B1

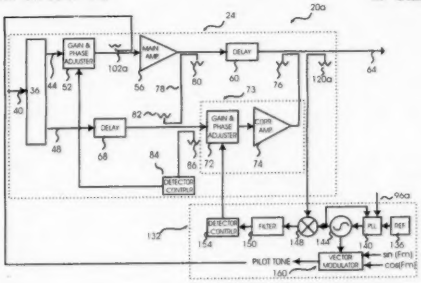
FEED FORWARD AMPLIFIER

James R. Blodgett, Walnut Creek, Calif., assignor to SOMA Networks, Inc., San Francisco, Calif.

Filed Nov. 20, 2000, Appl. No. 715,085

Int. Cl. H03F *3/66*

U.S. Cl. 330—52 **19 Claims**



1. A pilot tone generator-receiver for a feed-forward amplifier having a main amplifier and an error correction pathway, said generator-receiver comprising:

an oscillator for producing a signal;

a vector modulator connected to said oscillator and for subtracting a modulating frequency from said signal in order to generate a pilot tone suitable for injection prior to said main amplifier; and,

a receiver circuit connected to said oscillator and for detecting a pilot tone from an output of said feed-forward amplifier, and such that said error correction pathway is operable to introduce a signal at said output in order to substantially eliminate said pilot tone and any error introduced by said main amplifier.

US 6,340,916 B1

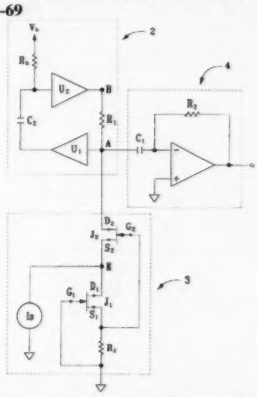
RANSIMPEDANCE AMPLIFIER CIRCUIT

Tsz-Lang Chen; Guang-Ching Leu, and Chun-Yo Hsu, all of Taoyuan Hsien, Taiwan, assignors to Telecommunications Laboratories, Chunghwa Telecom Co., Ltd., Taoyuan Hsien, Taiwan

Filed Sep. 21, 2000, Appl. No. 666,295

Int. Cl. H03F *3/48;* **H01L** *31/00*

U.S. Cl. 330—69 **8 Claims**



1. A transimpedance amplifier circuit comprising:

a buffer circuit for inputting a signal current being able to effectively transmit a signal current to an input node of said transimpedance amplifier circuit, and also isolating a capacitor effect which will possibly existing in the signal source so as to widen circuit frequency band;

a simulation resistor circuit for permitting a large amount of background DC to flow through when operating at a low frequency, while improving the signal coupling efficiency and reducing foreign signal output voltage when operating at a high frequency so as to cause said transimpedance amplifier circuit to obtain a high sensitivity and large amplification factor in detecting a current signal; and

an amplifier circuit for amplifying a signal.

US 6,340,917 B1

BROAD FREQUENCY BAND LINEARIZATION DEVICE

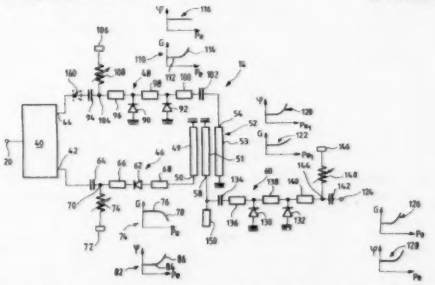
Jean-François Villemazet, Cintegabelle; Pascal Moroni, Toulouse, and Bernard Cogo, Montrabe, all of France, assignors to Alcatel, Paris, France

Filed Mar. 17, 2000, Appl. No. 527,595

Claims priority, application France, Mar. 18, 1999, 99 03396

Int. Cl. H03F *1/26*

U.S. Cl. 330—149 **25 Claims**



1. A device for linearizing the gain and phase of an amplifier operating in the UHF range, the device receiving an input signal, the device comprising:

a coupler having first and second inputs, and an output;

a first channel receiving the input signal and supplying a first output signal, the first channel comprising a Schottky diode coupled in series to the first input of the coupler;

a second channel receiving the input signal and supplying a second output signal, the second channel coupled to the second input of the coupler, and the second channel comprising at least one Schottky diode coupled between the second input of the coupler and ground,

the coupler putting in phase the first and second output signals supplied by the first and second channels, respectively; and

a third channel, connected at the output of the coupler and comprising at least one Schottky diode.

US 6,340,918 B2

NEGATIVE FEEDBACK AMPLIFIER CIRCUIT

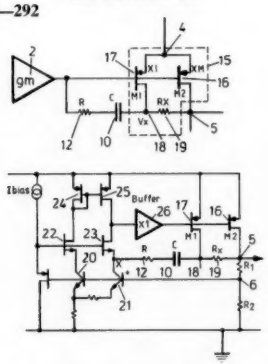
Craig Taylor, Oldham, United Kingdom, assignor to Zetex PLC, United Kingdom

Filed Nov. 30, 2000, Appl. No. 727,836

Claims priority, application United Kingdom, Dec. 2, 1999, 9928458

Int. Cl. H03F *1/14*

U.S. Cl. 330—292 **22 Claims**



1. An amplifier circuit comprising a first amplifier stage controlling a second gain stage which is coupled between an input node and an output node, and a frequency compensating circuit coupled between a compensating circuit node of the second gain stage and a control input of the second gain stage, wherein the gain stage comprises:

first and second output devices arranged such that for a given gate voltage, the output current from the first device is greater than the output current from the second device;

the output devices having a common source coupled to the input node and a common gate coupled to the first amplifier stage;

the drain of the first output device being coupled to the output node and the drain of the second output device being coupled to the compensating circuit node; and

a resistance device connected between the drains of the two output devices.

US 6,340,919 B1

RANDOM NUMBER GENERATING CIRCUIT

Koji Hirayama, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 19, 2000, Appl. No. 551,892

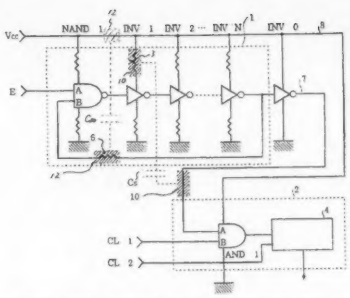
Claims priority, application Japan, Nov. 5, 1999, 11-314660

Int. Cl. H03B *5/24*; **H03K** *3/00*; **G06F** *1/02*

U.S. Cl. 331—78 **13 Claims**

1. A random number generating circuit comprising:

an oscillator circuit which is comprised of a plurality of logic gate circuits and has an input terminal and an output terminal, wherein the logic gate circuits are connected in series between



the input terminal and the output terminal, and wherein an output one of the logic gate circuits is connected to the input terminal;

a power supply line which supplies a power supply;

a resistive element which is connected between the power supply line and one of the logic gate circuits;

a conductive line which is supplied with a signal; and

a capacitive element which is formed by the resistive element and the conductive line through an insulating layer wherein random numbers are provided based on capacitance of the capacitive element.

US 6,340,920 B1

LOW VOLTAGE LOW POWER CRYSTAL OSCILLATOR

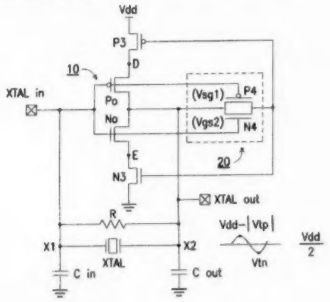
Yuh-Kuang Tseng, Taoyuan Hsien, Taiwan, assignor to Industrial Technology Research, Hsinchu, Taiwan

Filed Apr. 12, 2000, Appl. No. 548,033

Claims priority, application Taiwan, Feb. 23, 2000, 89103130

Int. Cl. H03B *5/06*

U.S. Cl. 331—116 FE **4 Claims**



1. An oscillator, comprising:

an inverter and a quartz crystal connected in parallel, said quartz crystal having a crystal input and a crystal output;

a voltage source;

an upper clamper connected between said inverter and said voltage source;

a ground node;

a lower damper connected between said inverter and said ground node; and

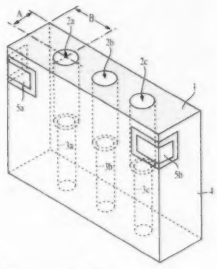
a feedback-controlled switch having a pair of switch control nodes connected to said crystal input, a switch input connected to said crystal output, and a switch output connected to said upper damper and said lower clamper, wherein a potential at said switch output is determined by voltage levels at said switch control nodes and said switch input in order to control said upper damper and said lower damper while oscillating.

US 6,340,921 B1

DIELECTRIC FILTER, DIELECTRIC DUPLEXER, AND COMMUNICATION APPARATUS USING THE SAME

Katsuhito Kuroda, Mato; Jinsei Ishihara, Kanazawa, and Hideyuki Kato, Ishikawa-ken, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 23, 2000, Appl. No. 602,304
Claims priority, application Japan, Jun. 25, 1999, 11-179675
Int. Cl. H01P *1/202*
U.S. Cl. 333—134 4 Claims



1. A dielectric filter comprising:

a substantially rectangular-parallelepiped dielectric block;

a plurality of holes formed inside the dielectric block, the holes aligned in parallel with each other along a lengthwise line of the dielectric block;

inner conductors formed on the inner surfaces of the plurality of the holes; and

outer conductors formed on external surfaces of the dielectric block;

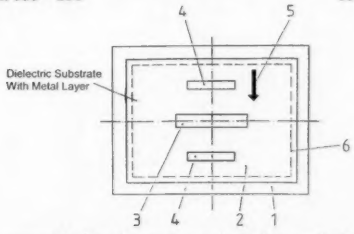
wherein the distance between the central axis of an outermost hole of the aligned holes and a widthwise line of the dielectric block is set to be two times or more than the distance between the central axis of the outermost hole and a lengthwise line thereof.

US 6,340,922 B1

WAVEGUIDE FILTER WITH THREE APERTURES FOR PASSING TRANSMISSION FREQUENCIES AND BLOCKING INTERFERENCE FREQUENCIES

Stefan Rust, Senden, Germany, assignor to DaimlerChrysler Aerospace AG, Munich, Germany

PCT No. PCT/EP96/02686, § 371 Date Dec. 30, 1997, § 102(e) Date Dec. 30, 1997, PCT Pub. No. WO97/02619, PCT Pub. Date Jan. 23, 1997
PCT Filed Jun. 20, 1996, Appl. No. 981,789
Claims priority, application Germany, Jun. 30, 1995, 195 23 869
Int. Cl. H01P *1/207*
U.S. Cl. 333—208 16 Claims



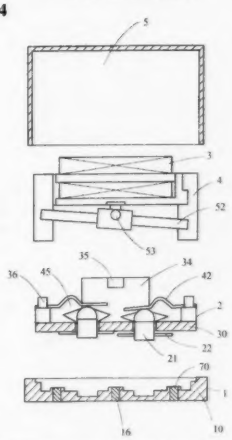
1. A waveguide filter inserted as a planar first conducting structure in a cross-sectional plane of an elongated waveguide, perpendicular to the waveguide axis, between a feeding and an extending segment of the waveguide, with the first conducting structure having a centrally arranged aperture formed for natural resonance for a selected transmission frequency f (ind **0**), and, in addition to the centrally arranged aperture (**3**), two identically configured, parallel, spaced-apart apertures (**4**), and wherein the identically configured apertures (**4**) are formed for natural resonance for an interference frequency f (ind **S1**) to be blocked by the waveguide filter, and the apertures (**3**,**4**) are arranged in the conducting structure (**2**) such that, relative to a longitudinal expansion of the respective apertures, the apertures are positioned respectively in the center of a symmetry axis for the conducting structure (**2**), which axis runs parallel to field strength vectors (**5**) for the waveguide.

US 6,340,923 B1

HIGH FREQUENCY RELAY

Hiroshi Yamanaka, Moriguchi; Toshiyuki Suzuki, Nara, and Kazunobu Nakata, Fuwa-gun, all of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Dec. 20, 2000, Appl. No. 739,774
Claims priority, application Japan, Dec. 22, 1999, 11-363617
Int. Cl. H01H *53/00*
U.S. Cl. 335—4 19 Claims



1. A high frequency relay comprising a contact base block having at least one pair of fixed contacts, at least one contact member with a movable contact, and an electromagnet for moving said contact member to open and close said pair of fixed contacts by said movable contact,

wherein said contact base block comprises:

a base having at least one pair of projections on its top surface, which is an injection-molded article of an electrical insulating material;

first metal films formed as said fixed contacts on top surfaces of said projections;

second metal films formed as connection terminals for outside devices on said base, each of which corresponds to one of said first metal films;

connecting means for making an electrical connection between each of said first metal films and the corresponding second metal film; and

a third metal film at least formed on the top surface of said base to provide electrical isolation from said first and second metal films, which works as electromagnetic shield means.

US 6,340,924 B1
REPEATEDLY USABLE HIGH-OPERATING-SPEED CIRCUIT PROTECTION DEVICE USING REED MEMBERS

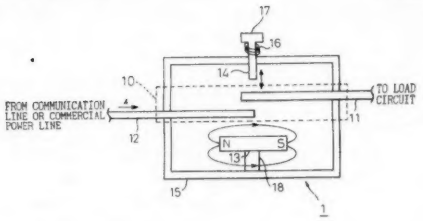
Nobuyoshi Shimizu; Koichi Kondoh, and Chiaki Maeno, all of Tokyo, Japan, assignors to Fujitsu Takamisawa Component Limited, Tokyo, Japan

Filed Jul. 14, 2000, Appl. No. 616,967

Claims priority, application Japan, Sep. 28, 1999, 11-274753; Apr. 27, 2000, 12-132900

Int. Cl. H01H *1/66;51/00*

U.S. Cl. 335—151 **18 Claims**



17. A device comprising:

a pair of reed members separated to form a gap;

a magnetic-field generating unit to generate a magnetic field, the magnetic field maintaining contact between the members; and

a contact gap reduction unit to reduce the gap to a gap corresponding to a pull-in of the magnetic field,

the contact gap reduction unit contacting one of the pair of reed members.

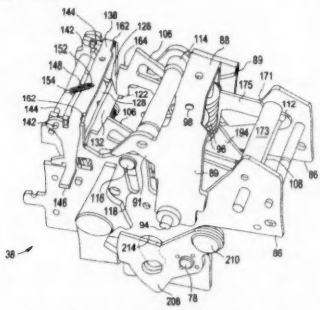
US 6,340,925 B1
CIRCUIT BREAKER MECHANISM TRIPPING CAM

Roger N. Castonguay, Terryville, and Dave Christensen, Harwinton, both of Conn., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of application No. 09/516,475, filed on Mar. 1, 2000, Provisional application No. 60/190,180, filed on Mar. 17, 2000. This application Jul. 14, 2000, Appl. No. 615,970.

Int. Cl. H01H *9/00*

U.S. Cl. 335—172 **5 Claims**



1. A circuit breaker operating mechanism for separating a pair of electrical contacts within an electrical circuit breaker, the circuit breaker operating mechanism comprising:

a lower link operatively connected to one of the electrical contacts;

an upper link including first and second legs extending from a central portion, said first leg pivotally secured to said lower link, said second leg including a cam surface formed thereon;

a roller in intimate contact with said cam surface when said pair of electrical contacts are open, said cam surface being configured such that movement of said upper link about said central portion is increased relative to movement prior to said intimate contact with said roller for increasing a gap between said pair of electrical contacts.

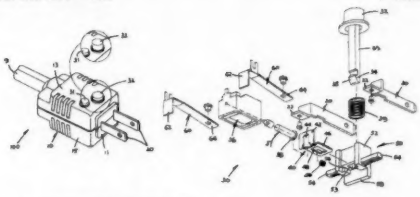
US 6,340,926 B1
POWER PLUG WITH CIRCUIT BREAKER

Raymond Wai Hang Chu, Chai Wan, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Defond Manufacturing Limited, Chai Wan, The Hong Kong Special Administrative Region of the People's Republic of China

Filed Dec. 22, 1999, Appl. No. 469,366

Int. Cl. H01H *37/76;* **H02H** *5/04*

U.S. Cl. 337—407 **7 Claims**



1. A power plug comprising:

a plug body having opposite sides and an end,

a plurality of terminal prongs extending from the end of the plug body, and

a built-in circuit breaker operable between a normal condition enabling the power plug to connect a load to a power source and a tripped condition disconnecting the load upon the detection of a circuit fault, the circuit breaker including first and second members located at opposite sides of the plug body, simultaneously moved from a first position, corresponding to the normal condition, to a second position, corresponding to the tripped condition, thereby providing an indication of the normal or tripped condition of the circuit breaker viewable on both sides of the plug body wherein the first member is a reset button for resetting the circuit breaker to the normal condition at a lowered position on the plug body, the reset button having a raised position protruding from the plug body and corresponding to the tripped condition.

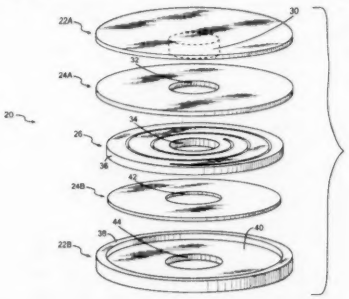
US 6,340,927 B1
HIGH THERMAL EFFICIENCY POWER RESISTOR

Hans Peter Peschl, Pachernweg, Austria, assignor to Elektronische Bauelemente Gesellschaft m.b.H, Pachernweg, Austria

Filed Jun. 29, 2001, Appl. No. 896,631

Int. Cl. H01C *1/08*

U.S. Cl. 338—59 **21 Claims**



1. A power resistor comprising:

first and second terminals;

a resistor positioned between the first and second terminals;

a first electrical insulator positioned between said resistor and said first terminal, and a second insulator positioned between said resistor and said second terminal;

said first terminal including an inner surface facing said first electrical insulator;

said inner surface of said first terminal having a projection extending through an opening formed in said first insulator and contacting said resistor;

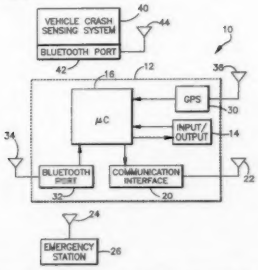
said second terminal including an inner surface facing said second insulator; and

said inner surface of said second terminal having a perimeter lip operative to contact a perimeter portion of said resistor.

US 6,340,928 B1
EMERGENCY ASSISTANCE SYSTEM USING BLUETOOTH TECHNOLOGY

Roger A. McCurdy, Troy, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Jun. 22, 2000, Appl. No. 599,981
Int. Cl. B60Q *1/00*
U.S. Cl. 340—436 **12 Claims**



1. An emergency assistance apparatus, comprising:

a vehicle crash sensing system including a first port using BLUETOOTH technology to transmit a vehicle crash signal indicative of a vehicle sensed crash condition; and

a portable cellular phone, transportable in or located near the vehicle, including a second port using BLUETOOTH technology to receive said crash signal and to enable wireless communications between said portable cellular phone and an emergency station in response to receipt of said crash signal.

US 6,340,929 B1
TRANSMITTER AND EXTERNAL CONTROLLER OF TIRE INFLATION PRESSURE MONITOR

Michiya Katou, Ichinomiya; Kazunori Sawafuji, Ogaki, and Akira Momose, Hashima, all of Japan, assignors to Pacific Industrial Co., LTD, Gifu-ken, Japan

Filed Nov. 15, 1999, Appl. No. 439,681
Claims priority, application Japan, Nov. 19, 1998, 10-329104; Dec. 17, 1998, 10-358316
Int. Cl. B60C *23/00*
U.S. Cl. 340—447 **9 Claims**

1. A tire pressure monitoring apparatus comprising:

a wheel transmitter for wirelessly transmitting data concerning vehicle tire inflation pressure, the wheel transmitter including:

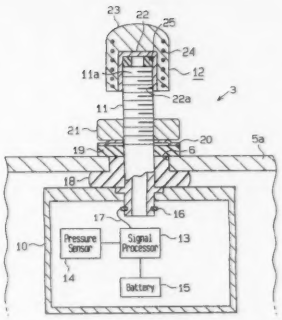
a wheel-mounted antenna;

a pressure sensor for measuring the tire inflation pressure of an associated tire;

a wheel-mounted transmission circuit for sending data that includes data representing the measured tire inflation pressure to the wheel-mounted antenna;

an internal controller for controlling the pressure sensor and the wheel-mounted transmission circuit;

a signal generation circuit, which is connected to the wheel-mounted antenna, wherein the signal generation circuit



generates a trigger signal for activating or deactivating data transmission from the wheel-mounted transmission circuit based on a particular trigger signal received through the wheel-mounted antenna, wherein the signal generation circuit sends the trigger signal to the internal controller; and

an external control unit for controlling the wheel transmitter, the external control unit including:

a wireless control unit-mounted transmission antenna;

an operation switch;

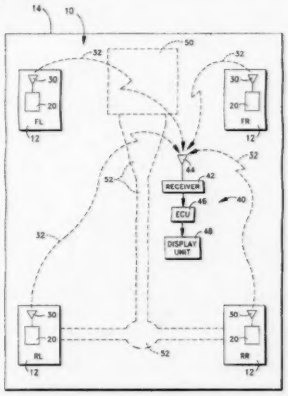
an oscillator, which generates the particular trigger signal for activating or deactivating the transmission of data from the wheel transmitter when the operation switch is turned on; and

control unit-mounted transmission circuit, which demodulates and sends the generated particular trigger signal to the control unit-mounted transmission antenna, wherein the particular trigger signal is transmitted from the control unit-mounted transmission antenna to the wheel-mounted antenna when the control unit-mounted transmission antenna is positioned close to or in contact with the wheel-mounted antenna.

US 6,340,930 B1
SYSTEM AND METHOD FOR MONITORING A CONDITION OF A VEHICLE TIRE

Xing Ping Lin, Waterford, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Mar. 7, 2001, Appl. No. 801,242
Int. Cl. B60C *23/00*
U.S. Cl. 340—447 **18 Claims**



1. A tire condition monitoring system for monitoring a condition of a vehicle tire, said tire condition monitoring system comprising:

a tire-based unit comprising means for monitoring a condition of a vehicle tire, means for assembling tire condition data indica-

tive of said condition of the vehicle tire, and means for transmitting at least one radio frequency signal including a signal indicative of said tire condition data; and

a vehicle-based unit comprising means for receiving said at least one radio frequency signal, means for determining an actual reception success rate of said at least one radio frequency signal, means for comparing said actual reception success rate to known reception success rates corresponding to known tire positions on the vehicle, means for identifying one of said known reception success rates that is closest to equal said actual reception success rate, and means for associating said at least one radio frequency signal with a known tire position corresponding to said one of said known reception success rates.

US 6,340,931 B1

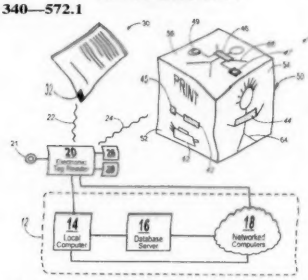
NETWORK PRINTER DOCUMENT INTERFACE USING ELECTRONIC TAGS

Beverly L. Harrison, Palo Alto; Kenneth P. Fishkin, Redwood City; Anuj Uday Gujar, Palo Alto, and Roy Want, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of application No. 09/151,162, filed on Sep. 10, 1998, now Pat. No. 6,249,226. This application Apr. 20, 2001, Appl. No. 839,667.

Int. Cl. G08B 13/14

U.S. Cl. 340—572.1 2 Claims



1. A printing control method using multiple electronic tags presented to an electronic tag reader connected to a network printer, the method comprising the steps of

providing a first input from a first electronic tag, the first electronic tag having a first identification number that is associated with a network accessible document, and

providing a second input from a second electronic tag after provision of the first input, the second electronic tag having a second identification number that invokes printing of the network accessible document associated with the first identification number.

US 6,340,932 B1

CARRIER WITH ANTENNA FOR RADIO FREQUENCY IDENTIFICATION

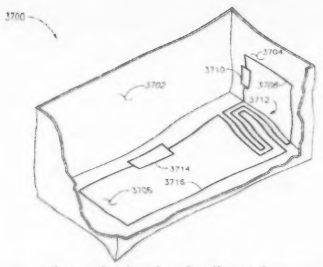
James L. Rodgers, Mesa; John J. Coulthard, Scottsdale; Billy C. Fowler, Phoenix; Howard K. Jaecks, Mesa; Roc A. Lastinger, Mesa; Paul A. Picard, Mesa, and Mohammad A. Rehman, Chandler, all of Ariz., assignors to RF Code, Inc., Mesa, Ariz.

Division of application No. 09/372,274, filed on Aug. 11, 1999, which is a continuation-in-part of application No. 09/233,755, filed on Jan. 20, 1999, which is a continuation-in-part of application No. 09/088,924, filed on Jun. 2, 1998, now abandoned. This application Jun. 27, 2000, Appl. No. 604,180.

Int. Cl. G08B 13/14

U.S. Cl. 340—572.7 10 Claims

1. A structure for retaining a provided plurality of radio frequency identification devices in a common location, the structure comprising:



a. a support that maintains the plurality at the common location; and

b. a circuit electrically isolated from the plurality, the circuit comprising a first antenna that re-radiates radio frequency energy for improving an operation of at least one of the radio frequency identification devices.

US 6,340,933 B1

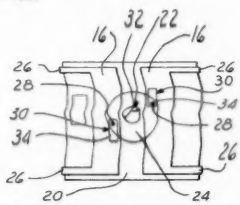
SEMICONDUCTOR WAFER TRANSPORT POD HAVING COVER LATCH INDICATOR

Yi-Jen Chen, Hsin-Chu Tai an, and Guey-Shyung Cho, Hsin-Chu, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin Chu, Taiwan

Filed Nov. 29, 1999, Appl. No. 450,211

Int. Cl. G08B 21/00

U.S. Cl. 340—687 17 Claims



1. A pod for transporting a cassette of semiconductor wafers, comprising:

a base for supporting said cassette thereon;

a cover removably carried on said base for protectively covering said cassette;

latch means carried on said base for latching said cover on said base, said latch means being actuatable from a latched condition in which said cover is latched said base to a released condition allowing removal of said cover from said base, said latch means includes a latch member shiftably mounted on said base, a drive plate and a drive pin carried on said plate, said drive pin being drivable by said plate to shift said latch member for latching and unlatching said cover; and

indicator means coupled with said latch means for providing a visual indication of the condition of said latch means, said indicator means includes means responsive to the position of said drive pin to produce an electrical signal related to the condition of said latch means.

US 6,340,934 B1

VEHICLE-RELEVANT ONBOARD ETC-INFORMATION COMMUNICATION CONTROL APPARATUS

Masaaki Hisada, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

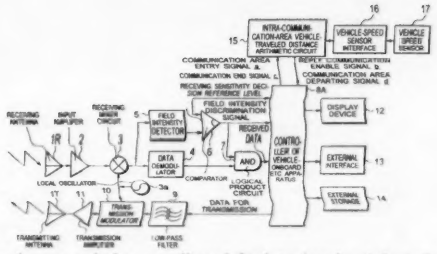
Filed Nov. 2, 2000, Appl. No. 703,731

Claims priority, application Japan, Mar. 31, 2000, 2000-097724

Int. Cl. G08G 1/00; 1/096

U.S. Cl. 340—928 5 Claims

1. An vehicle-onboard ETC-relevant information communication control apparatus mounted on a motor vehicle capable of



running on and along a toll road for interchanging information required for toll charge/payment transaction with ETC communication equipment installed in association with said toll road to thereby execute toll charge/payment settlement processing on the *basis of said ETC-relevant information:*

said vehicle-onboard ETC-relevant information communication *control apparatus comprising:*

communication limiting interval setting means for setting a communication limiting interval for disabling function of said vehicle-onboard ETC-relevant information communication control apparatus to conduct communication with said ETC communication equipment until said motor vehicle entered a *communication area where communication between said* vehicle-onboard ETC-relevant information communication control apparatus and said ETC communication equipment is allowed has traveled for a predetermined distance within said communication area after entry thereto;

vehicle-traveled distance arithmetic means for arithmetically determining a vehicle-traveled distance for which said motor vehicle has traveled within said communication area from a time point when said motor vehicle entered said communica*tion area; and*

communication control means for making decision as to whether *or not said vehicle-traveled distance arithmetically determined* by said vehicle-traveled distance arithmetic means exceeds said communication limiting interval preset by said communication limiting interval setting means, to thereby allow *communication between said vehicle-onboard ETC-relevant* information communication control apparatus and said ETC *communication equipment to be started when said decision is made to such effect that said vehicle-traveled distance has* exceeded said communication limiting interval.

US 6,340,935 B1

COMPUTERIZED PARKING FACILITY MANAGEMENT SYSTEM

Brett O. Hall, 4206 Lazy Creek Dr., Marietta, Ga. 30066

Continuation-in-part of application No. 09/443,331, filed on *Nov. 19, 1999, now abandoned, Provisional application No.* 60/118,928, filed on Feb. 5, 1999. This application Jun. 30, 2000, Appl. No. 609,196.

Int. Cl. B60Q *1/48*

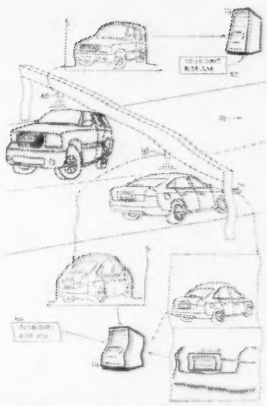
U.S. Cl. 340—932.2 **24 Claims**

1. A computerized system for the operation and management of *a parking facility including any and all spaces used to park* vehicles, said system comprising:

first vehicle characterization means for capturing inherent attributes of each vehicle upon or after its entry into the parking facility;

means for tracking each vehicle within the parking facility; and

computer means communicating with said vehicle characterization means and said tracking means, said computer means operative for processing and displaying data pertaining to the



location and identification of each vehicle within the parking facility.

US 6,340,936 B1

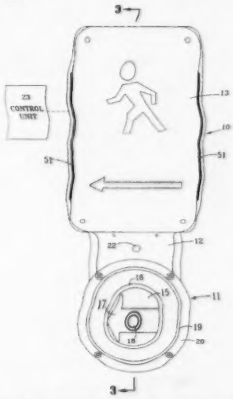
ACCESSIBLE PEDESTRIAN SIGNAL SYSTEM

John F. McGaffey, 36865 Avenida La Cresta, Murrieta, Calif. 92563; Wayne L. Russell, 2503 Raymond Pl., Ontario, Calif. *91761; Randy Van Cruz, 701 Rye Ave., La Habra, Calif.* 90631, and Leslie A. Beckwith, 12778 Stanhill Dr., La Mirada, Calif. 90638

Filed Aug. 18, 2000, Appl. No. 640,581

Int. Cl. G08G *1/095*

U.S. Cl. 340—944 **15 Claims**



1. An accessible pedestrian signal system to assist visually *impaired persons to cross a signal-controlled intersection, said* signal system being of the type including a push button station including a tactile signal generated in the push button station, wherein the improvement comprises:

a push button frame including means for mounting the frame on a support structure located at the signal-controlled intersection;

a flexible diaphragm mounted on said frame, said flexible diaphragm having an inwardly facing surface and an outwardly facing surface;

a push button mounted on said outwardly facing surface, said push button having an outwardly-facing, finger-contacting surface; and

means for vibrating the push button so that a pedestrian may receive a tactile response while touching the push button to convey a cross/don't-cross indication.

US 6,340,937 B1

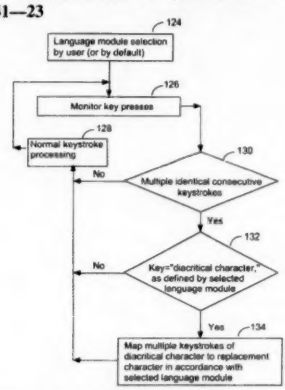
SYSTEM AND METHOD FOR MAPPING MULTIPLE IDENTICAL CONSECUTIVE KEYSTROKES TO REPLACEMENT CHARACTERS

Matej Stepita-Klauco, 2548 Greer Rd., Palo Alto, Calif. 94303

Filed Dec. 9, 1999, Appl. No. 458,536

Int. Cl. H03K *17/94;* **H03M** *11/00*

U.S. Cl. 341—23 **28 Claims**



1. A computer implemented method of processing user keystrokes entered on a keyboard having a distinct set of alphabetical keys and number keys, comprising:

monitoring user keystrokes;

detecting user entry of consecutive keystrokes of any one key of a set of alphabetical keys wherein each key of a first subset of the set of alphabetical keys corresponds to a diacritical character in a predefined set of diacritical characters and each key of a second subset of the set of alphabetical keys corresponds to a non-diacritical character;

when the one key is in the first subset of the set of alphabetical keys, mapping the detected consecutive keystrokes into a character selected from a set consisting of the diacritical character corresponding to the one key and a replacement character that is a variation of the diacritical character in accordance with a predefined set of keystroke mappings; and

when the one key is in the second subset of the set of alphabetical keys, mapping the detected consecutive keystrokes into consecutive occurrences of the non-diacritical character corresponding to the one key.

US 6,340,938 B1

DEMODULATING DEVICE, DEMODULATING METHOD AND SUPPLY MEDIUM WITH PREDETERMINED ERROR LENGTH

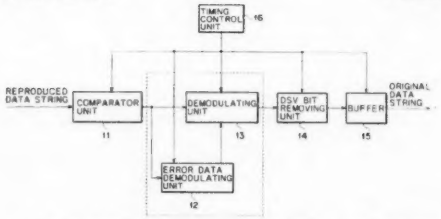
Toshiyuki Nakagawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 20, 1999, Appl. No. 378,064

Claims priority, application Japan, Aug. 24, 1998, 10-237593

Int. Cl. H03M *5/00;7/00;7/40*

U.S. Cl. 341—58 **5 Claims**



1. A demodulating device for demodulating a supplied input code into data, wherein said code is represented as a variable length code derived from predetermined conversion tables, and said variable length code (d, k; m, n; r) has a minimum run d of at least 1, a basic code length of n bits, a run length restriction and a constraint length, and said data has a basic data length of m bits, said demodulating device comprising:

constraint length specifying means for specifying the constraint length of the code having a predetermined length including an error; and

demodulating means having inverse conversion tables corresponding to the inverse of said conversion tables for demodulating the code based on the constraint length specified by the constraint length specifying means, said demodulating means having, means selectable by the specified constraint length for demodulating a supplied input code that is subjected to bit shift error Such that said supplied input code no longer is included in said inverse conversion tables.

US 6,340,939 B1

SWITCH DRIVER CIRCUITRY HAVING FIRST AND SECOND OUTPUT NODES WITH A CURRENT-VOLTAGE CONVERTER CONNECTED THEREBETWEEN PROVIDING CURRENT PATHS OF FIRST AND SECOND DIRECTIONS THEREBETWEEN AND SWITCHING CIRCUITRY CONNECTED THEREWITH

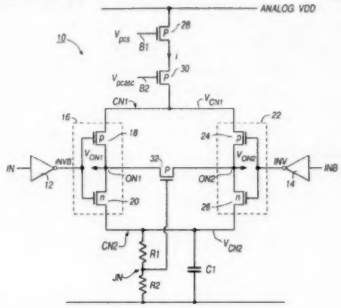
Ian Juso Dedic, Northolt, United Kingdom, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 8, 2000, Appl. No. 634,738

Claims priority, application United Kingdom, Nov. 10, 1999, 9926652

Int. Cl. H03M *1/00*

U.S. Cl. 341—136 **30 Claims**



1. Switch driver circuitry comprising:

first and second output nodes;

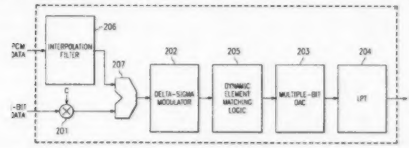
a current-voltage converter connected to said first and second output nodes to provide a current path through which current is permitted to flow in a first direction from said first to said second output node, or in a second direction from said second to said first output node, when the circuitry is in use, for producing a potential difference between said first and second output nodes that is dependent upon the magnitude and direction of the current flow; and

switching circuitry connected with said first and second output nodes and switchable, in dependence upon an applied control signal, from a first state, in which a current of preselected magnitude is caused to flow in said first direction through said current path, to a second state in which a current of substantially the same magnitude as said preselected magnitude is caused to flow in said second direction through said current path, a current-voltage characteristic of the current-voltage converter being such that said potential differences produced respectively in said first and second states have substantially the same magnitudes but opposite polarities.

US 6,340,940 B1
DIGITAL TO ANALOG CONVERSION CIRCUITS AND METHODS UTILIZING SINGLE-BIT DELTA-SIGMA MODULATORS AND MULTIPLE-BIT DIGITAL TO ANALOG CONVERTERS

John Laurence Melanson, Austin, Tex., assignor to Cirrus Logic, Inc.

Filed Jul. 18, 2000, Appl. No. 618,370
Int. Cl. H03M *3/01*
U.S. Cl. 341—143 **23 Claims**



1. Digital to analog converter circuitry comprising:

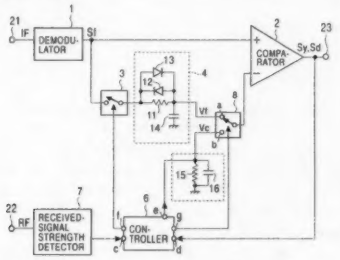
re-coding circuitry comprising a gain stage with a gain greater than one and a delta-sigma converter including a modulator for re-coding a received stream of 1-bit digital data into a stream of multiple bit data, said gain stage having a gain greater than one; and

a multiple-bit digital to analog converter for converting said stream of multiple-bit data into analog form.

US 6,340,941 B1
DIGITAL-SIGNAL FORMING CIRCUIT

Yoshinori Miura, and Hideo Izumi, both of Fukushima-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1999, Appl. No. 441,129
Claims priority, application Japan, Dec. 14, 1998, 10-354693
Int. Cl. H03M *1/18*
U.S. Cl. 341—155 **7 Claims**



1. A digital-signal forming circuit comprising:

an intermediate frequency demodulator to output a demodulated intermediate frequency signal by demodulating an intermediate frequency received signal;

a signal comparator to shape the demodulated signal into rectangular waves by performing a voltage comparison between the demodulated signal and a reference voltage and to output the rectangular waves as a digital signal;

an average-reference-voltage circuit to output an average reference voltage by averaging the demodulated signal;

a fixed-reference-voltage circuit to output a fixed reference voltage having a predetermined voltage;

a selection switch to select either of the two reference voltages and output the selected voltage to said signal comparator;

a make-and-break switch to one of enable and disable a connection between said demodulator and said average-reference-voltage circuit;

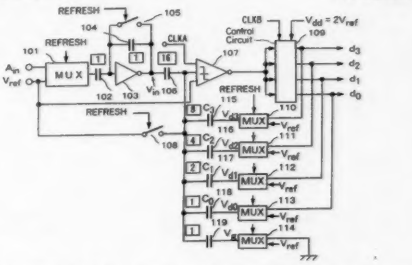
a radio-requency-received-signal-strength detector to output a strength signal in accordance with the strength of a radio-frequency received signal; and

a controller to control the selecting operation of said selection switch in accordance with the magnitude of the strength signal.

US 6,340,942 B1
ANALOG TO DIGITAL CONVERTER

Changming Zhou; Kunihiko Suzuki; Takashi Tomatsu, and Masataka Fukui, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan

Filed Oct. 6, 1999, Appl. No. 413,475
Claims priority, application Japan, Oct. 7, 1998, 10-285175; Oct. 13, 1998, 10-289901
Int. Cl. H03M *1/34*
U.S. Cl. 341—158 **14 Claims**



8. An analog to digital converter of sequential comparison type for sequentially outputting a digital signal output corresponding to an analog input voltage, comprising:

a plurality of sampling and holding circuits of a number more by one than a number of bits of said digital signal for holding said analog input voltage;

a plurality of multiplexers corresponding to said bits of said digital signal, each of said multiplexers successively outputs one of said sampling and holding circuits;

a plurality of thresholding circuits corresponding to said bits of said digital signal and said thresholding circuits, each said thresholding circuit receives the outputs of said corresponding multiplexers having thresholds corresponding to weights of said bits of said digital signal; and

a plurality of holding circuits corresponding to said thresholding circuits, one of said holding circuits corresponds to a LSB (least significant bit) of said digital signal having one stage, the other said holding circuits having increasing stages by one from said LSB,

wherein,

an output of a first stage of said holding circuits is input to said thresholding circuit of adjacent lower bit, outputs of following stages are input to said thresholding circuits of lower bits, and

each one of the other said thresholding circuits of second or lower bits comprises:

a switch for outputting a high reference voltage or a low reference voltage in response to said outputs of said holding circuits;

a plurality of capacitances that receives outputs of said switches and said multiplexers and are integrated at their outputs;

a comparison circuit that compares said integrated output of said capacitances with a predetermined threshold,

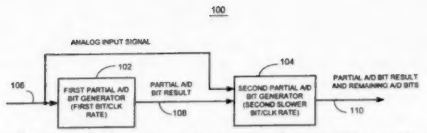
said thresholding circuit of MSB (most significant bit) comprises capacitance connected to said output of said multiplexers, and a comparison circuit that compares said integrated output of said capacitances with a predetermined threshold.

US 6,340,943 B1
ANALOG TO DIGITAL CONVERTER METHOD AND APPARATUS

Hugh Chow, Richmond Hill, and Edward G. Callway, Toronto, both of Canada, assignors to ATI International SRL, Barbados

Filed Jan. 14, 2000, Appl. No. 483,196
Int. Cl. H03M *1/38*
U.S. Cl. 341—161 **20 Claims**

1. A multistage A/D converter comprising:



a first partial A/D bit generator operatively coupled to receive an analog input signal to be converted, and operative to generate a partial A/D bit result of a complete A/D result, at a first bit/clock rate; and

a second partial A/D bit generator, operatively coupled to the analog input signal and operatively responsive to the partial A/D bit result from the first partial A/D bit generator, that generates remaining A/D bits of the complete A/D result, from the partial A/D bit result at a second and slower bit/clock rate.

US 6,340,944 B1

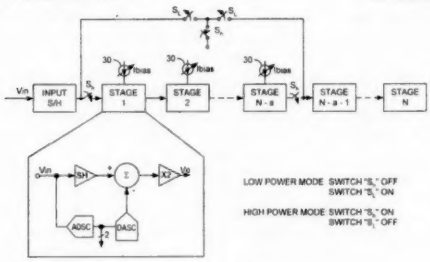
PROGRAMMABLE POWER CONSUMPTION PIPELINE ANALOG-TO-DIGITAL CONVERTER WITH VARIABLE RESOLUTION

Ronald Chang, Fremont; Jose A. Salcedo, Livermore, and Raphael Horton, Pleasanton, all of Calif., assignors to Exar Corporation, Fremont, Calif.

Filed Aug. 21, 2000, Appl. No. 643,385

Int. Cl. H03M *1/44;1/38*

U.S. Cl. 341—161 **11 Claims**



1. An analog-to-digital converter circuit comprising:

an analog input;

a plurality of digital bit output lines; and

at least one switch, responsive to a low resolution mode signal, for selecting digital outputs for for only certain of said plurality of digital bit output lines,

wherein said analog-to-digital converter circuit comprises a plurality of pipelined stages, and said at least one switch bypasses at least one of said stages.

US 6,340,945 B1

ANALOG/DIGITAL CONVERTER

Jörg Hauptmann, Wernberg, and Christian Schranz, Villach, both of Australia, assignors to Infineon Technologies AG, Munich, Germany

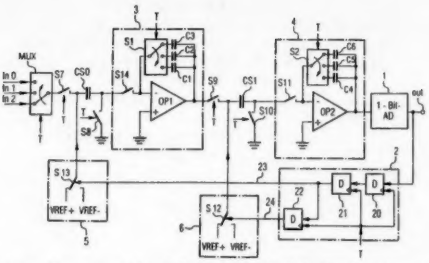
Continuation of application No. PCT/DE99/03927, filed on Dec. 8, 1999. This application Jun. 8, 2001, Appl. No. 875,971.

Claims priority, application Germany, Dec. 10, 1998, 198 57 042

Int. Cl. H03M *1/12;1/00*

U.S. Cl. 341—172 **17 Claims**

1. An analog/digital converter comprising a multiplicity of analog integrator circuits and also a 1-bit analog/digital converter and a 1-bit digital/analog converter, where the multiplicity of analog integrator circuits are connected in series, and the 1-bit analog/digital converter is connected downstream of the last analog integrator circuit in the series, where an output signal from the 1-bit analog/digital converter is supplied to the 1-bit digital/analog converter and an output signal from the 1-bit digital/analog converter is subtracted from an input signal of each analog integrator circuit, and where a multiplicity of input signals are supplied via a multiplexer to the first analog integrator circuit from the analog integrator circuits connected in series, wherein:



each analog integrator circuit has a multiplicity of capacitances in accordance with the multiplicity of input signals;

in each analog integrator circuit, a respective capacitance from the multiplicity of capacitances can be connected between an output and an input of an operational amplifier;

the output signal from the 1-bit digital/analog converter is delayed in accordance with the multiplicity of input signals;

the output signal from the 1-bit digital/analog converter is delayed by a shift register, the shift register having a multiplicity of outputs in accordance with the multiplicity of analog integrator circuits; and

the shift register is clocked by a clock signal, and the clock signal clocks, in parallel, a multiplicity of sampling switches which are connected upstream of the analog integrator circuits, and the clock signal causes a respective capacitance from the multiplicity of capacitances to be connected between an output and an input of the operational amplifier in each analog integrator circuit.

US 6,340,946 B1

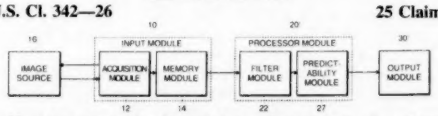
METHOD FOR DETERMINING STORM PREDICTABILITY

Marilyn Wolfson, Acton; Barbara Forman, Framingham, both of Mass.; Robert Hallowell, Nashua, N.H.; Michael Moore, Bedford, Mass.; James Wilson, Boulder, and Sandra Henry, Denver, both of Colo., assignors to Massachusetts Institue of Technology, Cambridge, Mass.

Filed Aug. 3, 2000, Appl. No. 631,157

Int. Cl. G01S *13/95*

U.S. Cl. 342—26 **25 Claims**



22. An apparatus for determining a characteristic of a selected weather radar image element, comprising:

an input module for receiving the element and neighboring elements within a weather radar image;

a prediction module for determining the characteristic, comprising:

a rotation module for iteratively rotating a filter in coordinate space;

a filter module for applying each rotated filter to the selected element and the neighboring elements to generate a plurality of selected filtered element values and a plurality of sets of filtered element values; and

a processor module for determining the characteristic from the plurality of selected filtered element values and the plurality of sets of filtered element values; and

an output module for displaying the characteristic.

US 6,340,947 B1

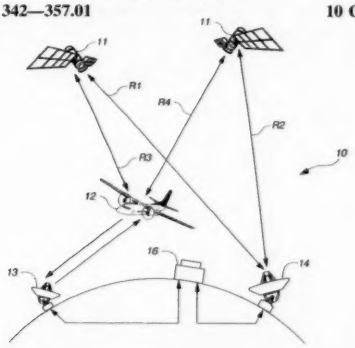
METHOD AND SYSTEM FOR DETERMINING A POSITION OF A TRANSCEIVER UNIT UTILIZING TWO-WAY RANGING IN A POLYSTATIC SATELLITE CONFIGURATION INCLUDING A GROUND RADAR

Donald C. D. Chang, Thousand Oaks; Kar W. Yung, Torrance; John I. Novak, III, West Hills, and William Goliff, Signal Hill, all of Calif., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Continuation of application No. 08/803,935, filed on Feb. 21, 1997, now abandoned. This application Dec. 22, 2000, Appl. No. 746,997.

Int. Cl. G01S *5/04;1/24*

U.S. Cl. 342—357.01 **10 Claims**



1. A method for determining position of an object using a ground radar and first and second satellites located in a field of view of the object, wherein the first and second satellites are separated from the object and the ground radar in a substantially vertical plane, the method comprising:

transmitting a first ranging signal from the ground radar directly to the object;

transmitting a second ranging signal from the object directly to the ground radar, in response to the object receiving the first ranging signal;

transmitting a third ranging signal from the object directly to the first satellite, in response to the object receiving the first ranging signal;

transmitting a fourth ranging signal from the first satellite directly to a satellite ground station, in response to the first satellite receiving the third ranging signal;

transmitting a fifth ranging signal from the object directly to the second satellite, in response to the object receiving the ranging signal;

transmitting a sixth ranging signal from the second satellite directly to the satellite ground station,, in response to the second satellite receiving the fifth ranging signal;

determining a first time delay corresponding to a time difference between transmission of the first ranging signal and receipt of the second ranging signal;

determining a second time delay to a time difference between transmission of the first ranging signal and receipt of the fourth ranging signal;

determining a third time delay corresponding to a time difference between transmission of the first ranging signal and receipt of the sixth ranging signal; and

determining the position of the object based on known locations of the ground radar, the first satellite, the second satellite, and the satellite ground station, and the first, second, and third time delays.

US 6,340,948 B1

ANTENNA SYSTEM

Samuel Munoz-Garcia, London, United Kingdom; Shinichi Nomoto, Tokyo, Japan; Peter Poskett, Little Marlow; Dennis Mullins, London, both of United Kingdom; Ben Hutchinson, Rockville, Md., and Patrick Chomet, London, United Kingdom, assignors to International Mobile Satellite Organization, United Kingdom

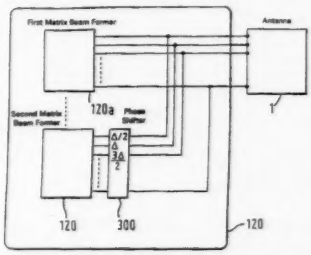
PCT No. PCT/GB95/00745, § 371 Date Jun. 17, 1997, § 102(e) Date Jun. 17, 1997, PCT Pub. No. WO95/28747, PCT Pub. Date Oct. 26, 1995

PCT Filed Mar. 30, 1995, Appl. No. 722,071

Claims priority, application United Kingdom, Apr. 18, 1994, 9407669

Int. Cl. H01Q *3/22;3/24;3/26*

U.S. Cl. 342—373 **23 Claims**



1. A satellite payload apparatus for generating or receiving a regularly angularly dispersed array of simultaneous radiation beams illuminating the earth, comprising an array of radiating elements defining an array antenna; and a beam former, the beam former comprising a network having a first side carrying a plurality of beam ports each for receiving a respective electrical signal corresponding to one of the beams, and a second side carrying a plurality of antenna ports each corresponding to one of the radiating elements such that some of the antenna ports are not connected to radiating elements, wherein there are more antenna ports than radiating elements, each beam port being connected to a plurality of antenna ports via a network of cascaded power divider and phase shifter components, the phase shifts of which are in integer multiples of a predetermined constant, so as to generate the array of beams; in which the array antenna has triangular or hexagonal symmetry and the array of beams has triangular or hexagonal symmetry.

US 6,340,949 B1

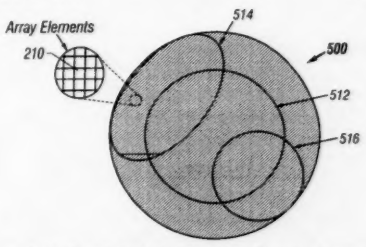
MULTIPLE BEAM PHASED ARRAY WITH APERTURE PARTITIONING

Steven O. Lane, Rolling Hills Estates, and James C. McCleary, Irvine, both of Calif., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Filed Dec. 7, 2000, Appl. No. 732,836

Int. Cl. H01Q *3/26*

U.S. Cl. 342—373 **8 Claims**



8. A method of partitioning a plurality of array elements for a multiple beam phased array comprising the steps of:

partitioning the plurality of array elements into a plurality of array element groups to form a plurality of beams; and

locating a taper center of each array element group at a point other than a center of the plurality of array elements.

US 6,340,950 B1

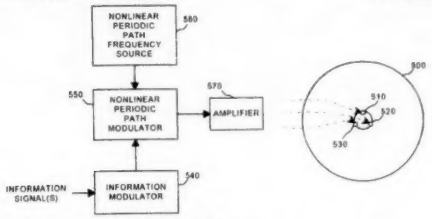
DISC ANTENNA SYSTEM

Stephen H. Smith, Leucadia, Calif., assignor to Smith Technology Development, LLC., San Diego, Calif.

Provisional application No. 60/240,949, filed on Nov. 9, 1998. This application Nov. 9, 1999, Appl. No. 437,892.

Int. Cl. H01Q *1/38*

U.S. Cl. 343—700 MS **14 Claims**



1. An antenna system, comprising:

a substantially annular antenna element having an outer perimeter edge and an inner perimeter edge comprising:

a solid conductive radiating surface defined by the region between the outer perimeter edge and the inner perimeter edge;

a central substantially circular non-conductive aperture defined by the inner perimeter edge; and

a plurality of feed points at substantially equally spaced angular positions about the inner perimeter edge; and

a plurality of one-dimensional amplifiers, each one-dimensional amplifier coupled to one of said feed points;

said antenna system configured to one of receive and transmit a wave having a carrier frequency and an electric field vector, the terminus of which traces a nonlinear path within a plane transverse to an axis of wave propagation at an angular velocity corresponding to a rotation frequency between the carrier frequency and zero.

US 6,340,951 B1

WIDEBAND MICROSTRIP LEAKY-WAVE ANTENNA

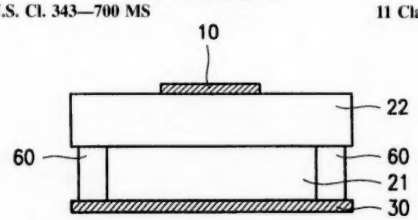
Jyh-Wen Sheen, Ilan Hsien, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 17, 2001, Appl. No. 761,888

Claims priority, application Taiwan, Jun. 2, 2000, 89110771 A

Int. Cl. H01Q *1/38*

U.S. Cl. 343—700 MS **11 Claims**



1. A wideband microstrip leaky-wave antenna, comprising:

a substrate constituted by at least one dielectric layer and having a first surface, a second surface opposite to the first surface, and a cavity located on the second surface;

a microstrip line having a width less than that of the cavity and is made of conductive material and located on the first surface of the substrate corresponding to a location of the cavity, for emitting leaky waves; and

a conductive plate made of conductive material and located on the second surface of the substrate opposite to the first surface wherein the cavity of the substrate is contiguous to the conductive plate.

US 6,340,952 B1

INDUCED LOOP ANTENNA

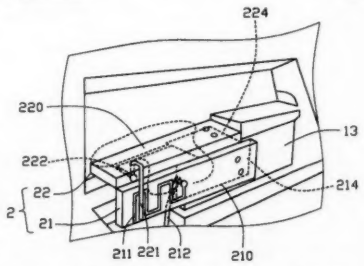
Szu-Nan Tsai; Hsiang-Hui Shen; Hsin Kuo Dai, and Ku Te Cheng, all of Tu-Chen, Taiwan, assignors to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Dec. 4, 2000, Appl. No. 730,021

Claims priority, application Taiwan, Oct. 20, 2000, 089122144

Int. Cl. H01Q *11/12*

U.S. Cl. 343—741 **11 Claims**



1. An induced loop antenna assembly for an electronic device, comprising:

a primary assembly, including:

a primary printed circuit board (PCB) with a radiation device thereon;

a connector for providing an electrical interface to an RF circuitry; and

a cable connecting the primary PCB with the connector; and

an assistant assembly including:

an assistant printed circuit board (PCB) extending substantially perpendicular to the primary PCB; and

an auxiliary wire attached to the assistant PCB;

wherein the auxiliary wire has a grounded end and couples with the radiation device, the radiation device electrically connects with the RF circuitry via the connector and the RF circuitry has a common ground with the auxiliary wire, thereby forming an induced loop for high frequency signal transmission.

US 6,340,953 B1

ANTENNA DEVICE

Toshihiro Teraoka, Osaka; Toshio Ishizaki, Hyougo; Koichi Ogawa, Osaka, and Tomoya Maekawa, Hyougo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

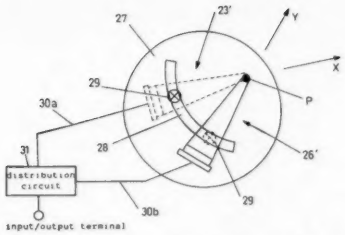
Filed Mar. 16, 2000, Appl. No. 527,232

Claims priority, application Japan, Mar. 19, 1999, 11-075163; May 14, 1999, 11-133812

Int. Cl. H01Q *13/02*

U.S. Cl. 343—776 **15 Claims**

12. An antenna device comprising a horn antenna connected to a power supply part waveguide, wherein a width dimension of an



antenna opening of said horn antenna is shorter than a corresponding width dimension of an opening portion of said power supply part waveguide.

US 6,340,954 B1

DUAL-FREQUENCY HELIX ANTENNA

Petteri Annamaa; Tero Kuittinen; Mika Bordi, and Pertti Puurunen, all of Oulu, Finland, assignors to Filtronic LK Oy, Kempele, Finland

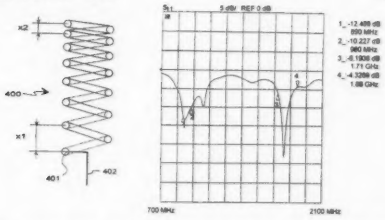
PCT No. PCT/FI98/00982, § 371 Date Jul. 26, 1999, § 102(e) Date Jul. 26, 1999, PCT Pub. No. WO99/31756, PCT Pub. Date Jun. 24, 1999

PCT Filed Dec. 15, 1998, Appl. No. 355,022

Claims priority, application Finland, Dec. 16, 1997, 974527

Int. Cl. H01Q *1/36*

U.S. Cl. 343—895 **6 Claims**



1. An antenna for transmitting and receiving radio-frequency signals, comprising:

a cylindrical coil conductor having a first and second turn and one or more additional turns between said first and second turn; said first and second turn each having a pitch unequal to the pitch of the other of said first and second turn; and

said one or more additional turns each having a pitch unequal to the pitch of the other of said additional turns; and

said respective pitches of said one or more additional turns having values between the respective values of the pitches of said first and second turns;

wherein said turns and pitches are arranged such that the fundamental resonant frequency of the antenna is in the operational frequency range of a first cellular radio system and a harmonic resonant frequency of the antenna is in the operational frequency range of a second cellular radio system.

US 6,340,955 B1

COMBINING METHOD FOR INTERNAL AND EXTERNAL INSULATING SLEEVES OF AN ANTENNA ON A COMMUNICATION INSTRUMENT

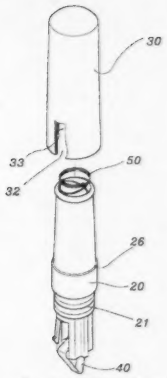
Jack Chao, Pa-Te, Taiwan, assignor to Auden Techno Corp., Taiwan

Filed Jul. 24, 2000, Appl. No. 624,549

Int. Cl. H01Q *1/24*

U.S. Cl. 343—895 **11 Claims**

1. A method for combining an internal insulating sleeve and an external insulating sleeve of an antenna for a communication instrument, including the steps of:



mounting a coil, and a plurality of positioning and electric connecting members in said internal insulating sleeve;

placing said internal insulating sleeve and said external insulating sleeve one over the other, said internal insulating sleeve having a connecting section partially exposed to the outside ready for connecting to said communication instrument;

providing said internal insulating sleeve and said external insulating sleeve, respectively, with an outer stepped shoulder and an inner stepped shoulder at a joint between them with a radial thickness for melting;

heating said internal insulating sleeve and said external insulating sleeve in a melting machine for melting the inner and outer stepped shoulders to join said internal insulating sleeve and said external insulating sleeve together.

US 6,340,956 B1

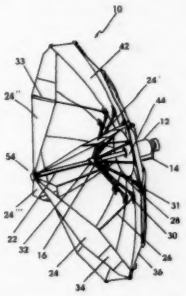
COLLAPSIBLE IMPULSE RADIATING ANTENNA

Leland H. Bowen, 8 Ridge Rd., Placitas, N. Mex. 87043, and Everett G. Farr, 614 Paseo del Mar, NE., Albuquerque, N. Mex. 87123

Provisional application No. 60/165,084, filed on Nov. 12, 1999. This application Nov. 13, 2000, Appl. No. 711,992.

Int. Cl. H01Q *15/20*

U.S. Cl. 343—915 **25 Claims**



1. A collapsible impulse radiating antenna, said antenna comprising:

a flexible conductive reflector;

an umbrella-like mechanism for moving said reflector between deployed and collapsed positions and for supporting said reflector in the deployed position; and

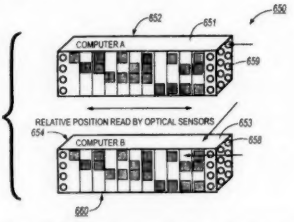
a plurality of flexible conductive feed arms.

US 6,340,957 B1

DYNAMICALLY RELOCATABLE TILEABLE DISPLAYS

Annette M. Adler, Palo Alto; Kenneth P. Fishkin, Redwood City; Beverly L. Harrison, Palo Alto; Matthew E. Howard, San Francisco, and Roy Want, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1997, Appl. No. 921,390
Int. Cl. G09G *5/60*
U.S. Cl. 345—1.3 **16 Claims**



1. A plurality of tileable devices for transferring data, comprising

a first device having a display, a processor, and a first communication module for transferring data;

a second device having a display, a processor and a second communication module for transferring data;

a third device having a display, a processor and a third communication module for transferring data;

wherein the first device is connected in substantially simultaneous communication with the second device and the third device to pass data based on spatial positions of the respective first device, second device, and third device, and

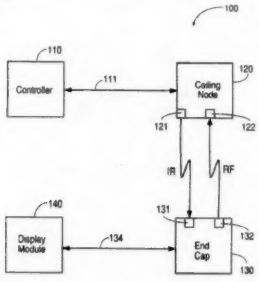
the first device maintains information about spatial position of the second device and the third device, and transfers differing data to the second device and the third device based on that maintained spatial position information, wherein the spatial position information maintained by the first device includes, for each of the second and third devices, information defining a relative spatial position between that second or third device and the first device.

US 6,340,958 B1

SOLAR POWERED PRICE DISPLAY SYSTEM

Gary R. Cantu, San Jose; James W. Pfeiffer, Los Gatos, and Daniel B. Steinberg, Campbell, all of Calif., assignors to PricePoint, Incorporated, Sunnyvale, Calif.

Continuation of application No. 08/372,411, filed on Jan. 13, 1995, now abandoned. This application Jul. 16, 1997, Appl. No. 895,498.
Int. Cl. G09G *3/00*
U.S. Cl. 345—2 **26 Claims**



1. A system for displaying product information, comprising:

a controller;

a ceiling node having IR transmitter and an RF receiver;

a first bus coupling said controller and said ceiling node for carrying messages between said controller and said ceiling node;

an end cap having IR receiver and RF transmitter, said end cap being mounted to a display shelf or gondola;

an individually addressable display module;

a rail for mounting said end cap and said individually addressable display module;

a second bus for carrying messages between said end cap and said individually addressable display module;

a third bus for carrying power, said individually addressable display module coupled to said third bus;

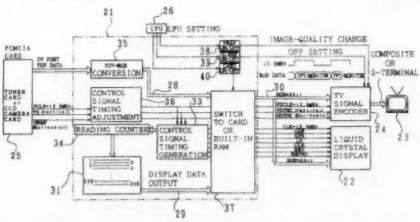
wherein said IR transmitter consumes more power than said IR receiver when said IR transmitter and IR receiver are operative, and said RF receiver consumes more power than said RF transmitter when said RF transmitter and RF receiver are operative.

US 6,340,959 B1

DISPLAY CONTROL CIRCUIT

Yoshimitsu Inamori, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 19, 1998, Appl. No. 195,542
Claims priority, application Japan, Nov. 19, 1997, 9-318707
Int. Cl. G09G *5/00*
U.S. Cl. 345—3.1 **9 Claims**



1. A display control circuit, which carries out the same image display simultaneously on a non-interlace matrix display device and on an interlace television receiver through a digital encoder, comprising:

common storage means for storing RGB data to produce identical displays on the matrix display device and the television receiver simultaneously; and

single reading means for reading the RGB data from the storage means and for outputting respective first and second control signals related to the displays on the matrix display device and the digital encoder,

wherein, when there is a specific relationship between the number of scanning lines of the matrix display and the number of effective scanning lines of the television receiver, the reading means outputs the same RGB data read from the storage means to the matrix display device and the digital encoder after a predetermined time period has elapsed from receipt of a vertical synchronous signal, and also outputs the first and second control signals individually.

US 6,340,960 B1

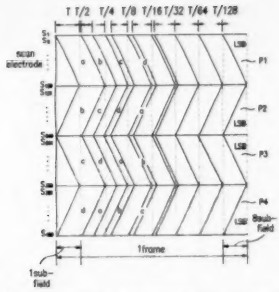
CIRCUIT AND METHOD FOR DRIVING PLASMA DISPLAY PANEL

Young Bok Song; Jae Hyuck Lee; Moon Shick Chung, all of Kyungsangbuk-do, and Nam Kyu Lee, Taegu-kwangyoksi, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Feb. 22, 1999, Appl. No. 253,730
Claims priority, application Rep. of Korea, Feb. 24, 1998, 98-5844; Mar. 17, 1998, 98-9006; Nov. 3, 1998, 98-47018
Int. Cl. G09G *3/28*
U.S. Cl. 345—60 **32 Claims**

1. A method for driving a plasma display panel having a plurality of driving blocks each with a plurality of scan electrode lines, comprising the steps of:

(1) applying a plurality of first scan pulses to a first driving block of the driving blocks by providing one per driving cycle



starting from a first scan electrode line to a (n)th scan electrode line in succession; and

(2) applying a plurality of second scan pulses to a second driving block by providing one per driving cycle starting from a (m)th scan line to a first scan line in a reverse sequence to the first scan pulses, wherein the first and second driving blocks apply the first and second scan pulses to the scan electrode lines in first and second address periods within an address discharge interval, and wherein the first and second scan pulses alternate the first and second address periods, respectively in successive address discharge intervals.

US 6,340,961 B1

METHOD AND APPARATUS FOR DISPLAYING MOVING IMAGES WHILE CORRECTING FALSE MOVING IMAGE CONTOURS

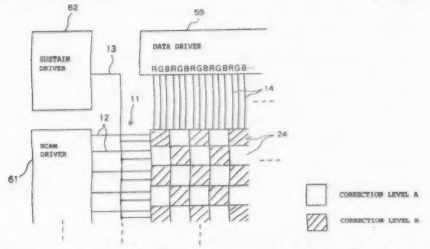
Akira Tanaka; Takuya Watanabe, and Hachiro Yamada, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 15, 1998, Appl. No. 173,001

Claims priority, application Japan, Oct. 16, 1997, 9-283747

Int. Cl. G06F *15/00*

U.S. Cl. 345—63 **27 Claims**



27. An apparatus for displaying a moving image by dividing a frame into a plurality of subfields having different relative luminance ratios and displaying a moving image of multiple gradations on a display panel having a matrix of display pixels, comprising:

an input which receives data;

a data storage which stores video gradation data of a preceding frame corresponding to unit pixels of the display pixels;

a data corrector which produces new n (n is a natural number) corrected video gradation data from the video gradation data of the preceding frame stored in said data storage and video gradation data of a present frame from said input; and

a correction controller which combines a plurality of video gradation data including:

(1) at least two of (a) said video gradation data of the preceding frame, (b) said video gradation data of the present frame, and (c) said n corrected video gradation data, or

(2) at least two of said n corrected video gradation data,

and disperses the combined video gradation data in a pixel plane of the display pixels according to a predetermined selection pattern, the dispersed video gradation data comprising:

(1) at least one of said (a) and (b), said (a) and (c), and said (b) and (c) combinations; or

(2) said combination of said at least two of said n corrected video gradation data.

US 6,340,962 B1

PLANE TYPE DISPLAYING APPARATUS

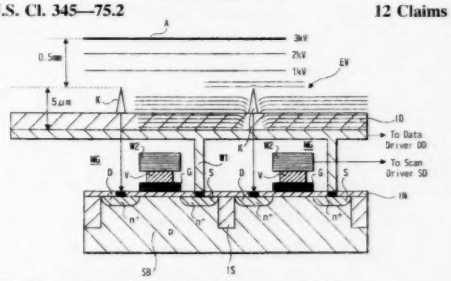
Morikazu Konishi, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Dec. 14, 1999, Appl. No. 459,879

Claims priority, application Japan, Dec. 16, 1998, P10-357935

Int. Cl. G09G *3/22*

U.S. Cl. 345—75.2 **12 Claims**



1. A plane type displaying apparatus, comprising:

a plurality of electric field emitting type cathodes,

a high-tension electrode which fixedly gives on a surface of said plurality of electric field emitting type cathodes a strong electric field forming a Schottky barrier capable of making possible electron emission from said plurality of electric field emitting type cathodes,

a two-dimensional MOS gate array which is connected to said plurality of electric field emitting type cathodes and controls presence or absence of the electron emission from said plurality of electric field emitting type cathodes, and

a fluorescent substance layer made to brighten by bombarding of the electrons selectively emitted from among said plurality of electric field emitting type cathodes.

US 6,340,963 B1

LIQUID CRYSTAL DISPLAY DEVICE

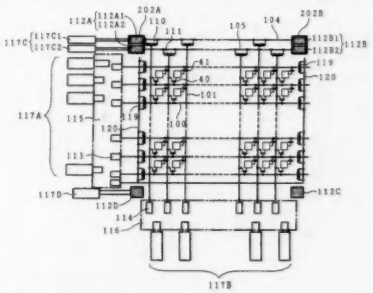
Kouichi Anno; Masaaki Matsuda; Tetsuya Kawamura; Hiroshi Okawara, all of Mobara, and Takeshi Tanaka, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 24, 1999, Appl. No. 448,514

Claims priority, application Japan, Nov. 26, 1998, 10-335846

Int. Cl. G09G *3/36*

U.S. Cl. 345—92 **6 Claims**



1. A liquid crystal display device comprising:

a color filter substrate including an insulating substrate having thereon a common electrode and color filters of multiple colors;

an active-matrix substrate including an insulating substrate opposing said color filter substrate with a specified gap defined therebetween for sealing therein a layer of liquid crystals to thereby constitute a liquid crystal panel, said active-matrix substrate having on its surface a plurality of scan electrode leads, a plurality of image signal electrode leads intersecting said scan electrode leads, an array of thin-film transistors organized into a two dimensional matrix to thereby form an effective display area by connection with the scan electrode leads and image signal electrode leads, pixel electrodes connected to respective ones of the thin-film transistors, more than one additive capacitive element connected to the pixel electrodes, a common electrode lead terminal for connection to said common electrode formed on the color filter substrate, scan electrode lead terminals which extend from said scan electrode leads within the effective display area up to a first side lying outside of this effective display area, image signal electrode lead terminals elongated from said image signal electrode leads in said effective display area up to a second side lying outside of the effective display area and neighboring upon said first side, and a dielectric protective film overlying at least said thin-film transistors;

a scan electrode driver circuit for supplying said scan electrode lead terminals with a signal voltage for display;

an image signal electrode driver circuit for supplying said image signal electrode lead terminals with a signal voltage for display;

first and second pairs of common electrode lead terminals formed at both said first sides facing each other with said effective display area lying therebetween, each of said first and second pairs being formed by electrical subdivision;

first and second electrostatic protective leads extending along the second side with said pixel signal electrode lead terminals formed thereat and being electrically connected to said first and second pairs of common electrode lead terminals, respectively;

a first electrostatic protective element for connection to the first electrostatic protective lead and one of a group of odd-numbered ones and a group of even-numbered ones of said image signal electrode leads; and

a second electrostatic protective element for connection to the second electrostatic protective lead and a remaining of the group of odd-numbered one and the group of even-numbered image signal electrode leads,

wherein said first and second pairs of common electrode lead terminals are electrically connected to each other via a conductive member for use in electrically connecting between said first and second pairs of common electrode lead terminals and the common electrode formed on said color filter substrate as bonded together with said active-matrix substrate.

US 6,340,964 B1
DRIVING DEVICE AND LIQUID CRYSTAL DISPLAY DEVICE

Akira Nakazawa; Masakazu Kitamura; Kiyoshi Tamai, and Makoto Nagai, all of Kanagawa, Japan, assignors to Optrex Corporation, Tokyo, Japan

Filed Sep. 30, 1999, Appl. No. 409,394
Claims priority, application Japan, Sep. 30, 1998, 10-278503
Int. Cl. G09G *3/36*
U.S. Cl. 345—100 **20 Claims**

1. A driving device comprising:

an imaginary data generating means,

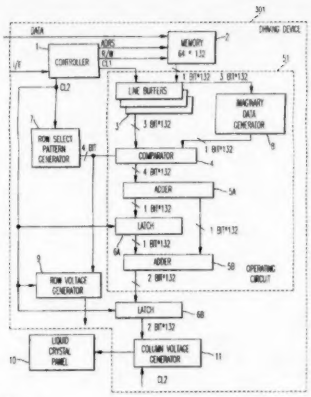
a row electrode driving means,

a column electrode driving means,

a memory means for memorizing display data,

an operating means for operating column output voltages, and

a row selection pattern generating means for outputting a row selection pattern;



wherein:

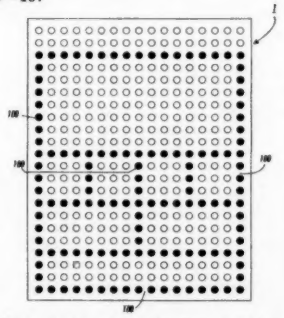
a k·m number (k is an integer not less than 2 and m is an integer not less than 1) of simultaneously selected/driven rows and a k·n number (n is an integer of not less than 1) of imaginary row are determined for a liquid crystal display element including row electrodes and column electrodes arranged in a matrix form and the display element is driven by a multiple line addressing (MLA) driving method, and

a matrix B is used for a row selection pattern, which is formed by expanding a matrix A of (m+n) rows where row vectors perpendicularly intersect each other, and column output voltages are operated in accordance with contents of the matrix A.

US 6,340,965 B1
MODIFIABLE DISPLAY HAVING FIXED IMAGE PATTERNS

Matthew E. Howard, San Francisco; David K. Biegelsen, Portola Valley; Daniel G. Bobrow, Palo Alto; L. Charles Hebel, Cupertino; Jock D. Mackinlay, Palo Alto; Nicholas K. Sheridon, Los Altos, and Alexander E. Silverman, Menlo Park, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 18, 1999, Appl. No. 271,373
Int. Cl. G09G *3/34*
U.S. Cl. 345—107 **31 Claims**



1. A modifiable display with a plurality of stable display states, comprising:

a first set of elements switchable between a first state and a second state; and

a second set of elements selectively physically fixed in the first state such that the second set of elements remains in the first state when subjected to any display signal, the second set of elements representing a desired image.

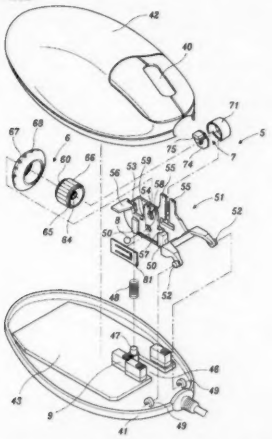
US 6,340,966 B1
CLAMPING DEVICE FOR THIRD-AXIS INPUT DEVICE OF MOUSE

Ching-Shun Wang, 2F, No. 550, Min Tsu E. Rd., Taipei; Cheng-Liang Hsieh, 7F, No. 142-1, Lane 108, Sec. 1, Kuang Fu Rd., E. Dist., Hsin Chu, and Hsin Te Tseng, 4F, No. 19, Shin-Chien St., Pei-Tou, Taipei, all of Taiwan

Filed Jan. 27, 2000, Appl. No. 492,040

Int. Cl. G09G *5/00*

U.S. Cl. 345—163 **5 Claims**



1. A clamping device for a third-axis input device of a mouse, said third-axis input device has a hollow roller stage and a roller pivotally mounted on the roller stage and having a plurality of positioning holes; the clamping device being mounted on one lateral side of said roller stage and comprising

at least one ball mount on said lateral side;

a through hole on the sidewall of said ball mount;

a rolling ball mounted on said through hole with partially exposed portion;

at least one blocking flange on outer sides of said lateral side;

a block plate locked by said blocking flange and used to retain said rolling ball such that said rolling ball is positioned within one positioning hole to confine the rotation of said roller.

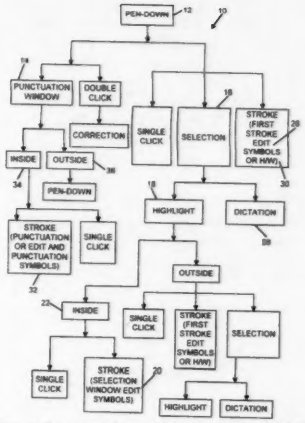
US 6,340,967 B1
PEN BASED EDIT CORRECTION INTERFACE METHOD AND APPARATUS

Sean Kenneth Maxted, Toronto, Canada, assignor to Natural Input Solutions Inc., Toronto, Canada

Provisional application No. 60/082,946, filed on Apr. 24, 1998, Provisional application No. 60/113,352, filed on Dec. 21, 1998. This application Apr. 23, 1999, Appl. No. 296,401.

Int. Cl. G09G *5/00*

U.S. Cl. 345—179 **32 Claims**



1. A correction method for use with a pen based computer system, the method comprising the steps of:

receiving an insertion point coordinate;

receiving an initial pen down coordinate corresponding to an initial pen down;

receiving a present pen down coordinate corresponding to a present position of a pen;

receiving a pen up coordinate corresponding to a pen up;

defining an ordered set of points between and including the initial pen down coordinate and the pen up coordinate;

determining a first time interval between the initial pen down and the pen up;

determining a second time interval between the initial pen down and the present pen down;

determining if the relative position of at least two of the initial pen down coordinate, the present pen down coordinate, the pen up coordinate, the first time interval, the second time interval and the ordered set of points corresponds to a set of pre-selected parameters which correspond to activaton of one or a plurality of modes; and

activating the mode.

US 6,340,968 B1
QUICK START APPARATUS FOR A DISPLAY AND METHOD THEREOF

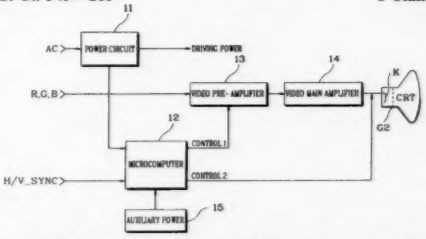
Sung-Jin Gu, Suwon-si, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 29, 1998, Appl. No. 221,878

Claims priority, application Rep. of Korea, Dec. 30, 1997, 97-77658

Int. Cl. G09G *5/00*

U.S. Cl. 345—211 **8 Claims**



1. A quick start apparatus for a display device using a pre-amplifier connected to a main amplifier, the quick start apparatus comprising:

a power circuit that supplies a driving power to the displaying device; and

a microcomputer that transmits a first control signal to the pre-amplifier, regulating a gain of the video signal, and a second control signal, regulating bias level of the video signal amplified and outputted by a main amplifier, so as to quickly display the video signal when the power circuit is switched ON.

US 6,340,969 B1

DISPLAY ADJUSTMENT DEVICE FOR PERSONAL COMPUTERS AND METHOD OF CONTROL THEREOF

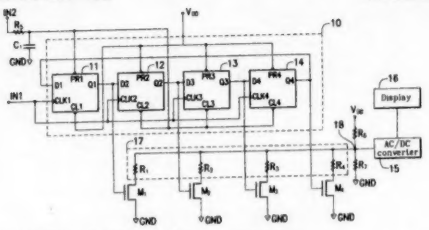
Wen-Feng Lin, Taipei, Taiwan, assignor to Mitac Technology Corp., Hsinchu, Taiwan

Filed Aug. 20, 1999, Appl. No. 378,302

Claims priority, application Taiwan, Sep. 10, 1998, 87115113

Int. Cl. G09G *5/00*

U.S. Cl. 345—211 **19 Claims**



1. A display adjustment device, comprising:

a selector for generating a logic pattern in response to a first control signal and a second control signal wherein the selector further comprises a plurality of flip-flops connected in series and formed into a loop;

a resistor set for variably providing an input resistance in response to said logic pattern; and

an AC/DC converter for adjusting control of a display in response to said input resistance.

US 6,340,970 B1

LIQUID CRYSTAL DISPLAY CONTROL DEVICE, LIQUID CRYSTAL DISPLAY DEVICE USING THE SAME, AND INFORMATION PROCESSOR

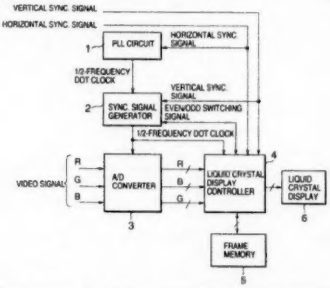
Tsutomu Furuhashi, Yokohama; Satoshi Konuma, Chigasaki; Tatsumi Mori, Isehara; Hiroshi Kurihara, Mobara; Shigeyuki Nishitani, Yokohama; Masashi Mori, Fujisawa, and Takeshi Maeda, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1999, Appl. No. 264,872

Claims priority, application Japan, Mar. 9, 1998, 10-056684

Int. Cl. G09G *5/00;3/36*

U.S. Cl. 345—213 **10 Claims**



1. A liquid crystal display control device for receiving a first video signal and a first synchronous signal to generate a second video signal and a second synchronous signal with which a dot-matrix type liquid crystal panel displays images thereon, including:

a clock generating circuit for generating, on the basis of the first synchronous signal, a 1/n-frequency dot clock having a period equal to n times the dot period of the first video signal (n represents an integer not less than 2) and having phase varied on a dot-period basis every frame period of the first video signal;

a data input circuit for picking up the first video signal in accordance with the 1/n-frequency dot clock and outputting display data which are digital data;

a frame memory in which the display data outputted are stored; and

a control circuit for generating the second synchronous signal at a predetermined timing and reading out the display data stored in said frame memory in synchronism with the second synchronous signal to generate the second video signal.

US 6,340,971 B1

METHOD AND DEVICE FOR KEYFRAME-BASED VIDEO DISPLAYING USING A VIDEO CURSOR FRAME IN A MULTIKEYFRAME SCREEN

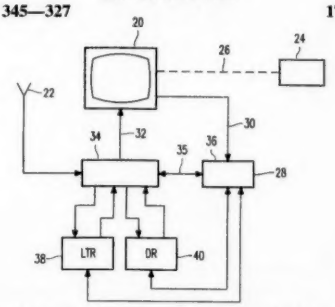
Magdalena D. Janse; Duco A. D. Das, and Hok K. Tang, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 29, 1998, Appl. No. 15,878

Claims priority, application European Pat. Off., Feb. 3, 1997, 97200286

Int. Cl. G06F *3/00*

U.S. Cl. 345—327 **17 Claims**



1. A method for keyframe-based displaying of a video presentation comprising:

displaying various keyframes in parallel in a reduced and static video format

selecting among said keyframes to generate a presentation,

controlling the presentation as starting from a particular active keyframe which subsequently to the selecting step acts as a dynamic video cursor frame within said format, and

displaying a substantially continuous video stream based on said presentation.

US 6,340,972 B1

GRAPHICS ADAPTER HAVING A VERSATILE LIGHTING ENGINE

Thomas Winters Fox, Georgetown, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1998, Appl. No. 165,085

Int. Cl. G06F *15/00*

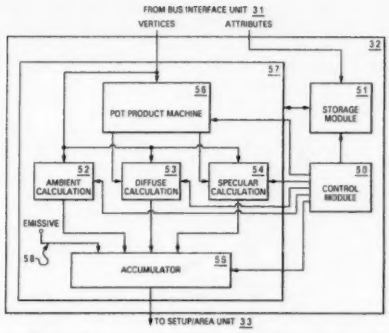
U.S. Cl. 345—426 **14 Claims**

1. A graphics adapter for generating graphics objects in a graphics scene, wherein each of said graphics objects is made up of a number of polygons that are delimited by a set of vertices, said graphics adapter comprising:

a diffuse color component calculation module for evaluating a diffuse color component;

a specular color component calculation module for evaluating a specular color component; and

a control module, coupled to said diffuse color component calculation module and said specular color component calculation module, for selectively controlling a frequency at which vertices are fed into said diffuse color component calculation module and said specular color component calculation module and for controlling a number of concurrent calculations that are performed on vertices within said diffuse color component calculation module and said specular color component



calculation module, in response to attributes received from a graphics software application.

US 6,340,973 B1

MEMORY CONTROL UNIT AND MEMORY CONTROL METHOD AND MEDIUM CONTAINING PROGRAM FOR REALIZING THE SAME

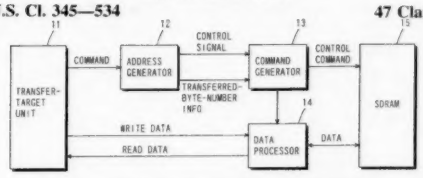
Toshiyuki Ochiai, Ibaraki; Yosuke Furukawa, Neyagawa; Yutaka Tanaka; Kozo Kimura, both of Osaka; Makoto Hirai, Suita; Tokuzo Kiyohara, Osaka, and Hideshi Nishida, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 4, 1999, Appl. No. 244,036

Claims priority, application Japan, Feb. 4, 1998, 10-023651; Dec. 3, 1998, 10-344522

Int. Cl. G06F *13/372*

U.S. Cl. 345—534 **47 Claims**



1. A memory control unit for controlling a synchronous memory composed of a plurality of banks for reading and writing data using a clock, said memory control unit comprising:

a transfer-target device operable to output commands for data reading and data writing;

an address generating device operable to receive the commands, generate and output previously-determined control signals in accordance with the commands, and output a transfer size of read data in one bank of the plurality of banks to which processing is to be performed;

a command generating device operable to generate and output the clock, receive the control signals, generate and output previously-determined control commands in accordance with the control signals, and thereby control the synchronous memory;

a counter operable to count a number of times of issuing read commands by said command generating device, and receive the transfer size to subtract a burst length from the transfer size with each count; and

a data processing device operable to receive the control commands, and mediate data transfer between said transfer-target device and the synchronous memory in accordance with the control commands;

wherein said counter, when the transfer size after the subtraction becomes not more than the burst length, notifying said command generating device of the fact, and in response to the notification, said command generating device issuing a next read command as a read command with precharge for automatically performing precharge processing after the read processing is terminated.

US 6,340,974 B1

THREE-DIMENSIONAL IMAGE PROCESSING APPARATUS WITH BUMP IMAGE MODIFICATION

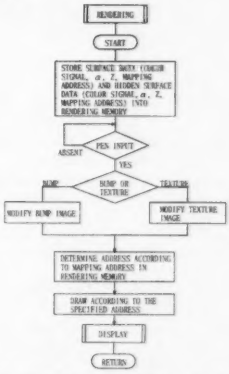
Hiroshi Nagashima, Takasho-machi, Japan, assignor to Shima Seiki Manufacturing, Ltd., Wakayama, Japan

Filed Dec. 21, 1998, Appl. No. 216,849

Claims priority, application Japan, Dec. 22, 1997, 9-365797

Int. Cl. G06T *11/40*

U.S. Cl. 345—584 **4 Claims**



1. An image processing apparatus for mapping a two-dimensional texture image to a three-dimensional model, rendering the mapped image, and displaying the rendered image comprising:

a bump memory for storing a bump image of said three-dimensional model;

modulation means for modulating a normal direction of said three-dimensional model according to the bump image;

mapping means for mapping said two-dimensional texture image to said three-dimensional model having the modulated normal direction;

rendering means for rendering the three-dimensional model after said mapping and displaying the rendered image;

drawing means for specifying a position in said rendered image and modifying the bump image at the address in the bump memory corresponding to said specified position; and

a rendering memory for storing said rendered image, wherein a reverse mapping address for reverse mapping said display image to said two-dimensional texture image and to said bump image is stored into said rendering memory.

US 6,340,975 B2

GAMUT CORRECTION WITH COLOR SEPARATION AND METHODS AND APPARATUSES FOR PERFORMING SAME

Jonathan Marsden, Sunnyvale, and Ramin Samadani, Menlo Park, both of Calif., assignors to Electronics for Imaging, Inc., Foster City, Calif.

Continuation of application No. 08/878,811, filed on Jun. 19, 1997, now Pat. No. 6,225,974. This application Mar. 7, 2001, Appl. No. 801,419.

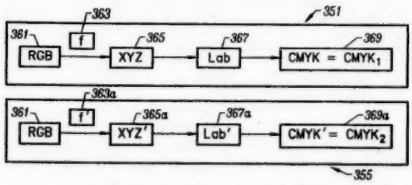
This patent is subject to a terminal disclaimer.

Int. Cl. G06T *11/40*

U.S. Cl. 345—590 **24 Claims**

1. A method for correcting for gamut limitations of a color output device, said method comprising:

creating a predefined color space for use in gamut correction due to said gamut limitations, the predefined color space based



upon a set of redefined chromaticities produced by redefining chromaticities from a first color space;

producing a set of color data values using the predefined color space, said set of color data values for use in converting from the first color space to a second color space, wherein the second color space is an ink colorant color space and said set of color data values forms a color separation table.

US 6,340,976 B1
MULTIVISION SYSTEM, COLOR CALIBRATION METHOD AND DISPLAY

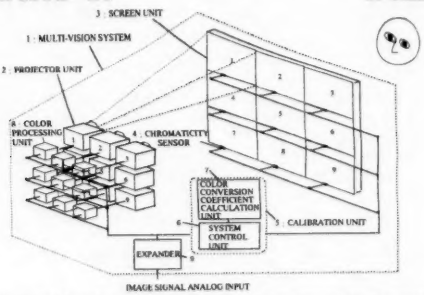
Mariko Oguchi; Masayuki Saito, and Kimiyoshi Miyata, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP98/01709, § 371 Date Aug. 17, 1999, § 102(e) Date Aug. 17, 1999, PCT Pub. No. WO99/53693, PCT Pub. Date Oct. 21, 1999

PCT Filed Apr. 15, 1998, Appl. No. 367,556

Int. Cl. G09G *5/02*

U.S. Cl. 345—690 **20 Claims**


3 : SCREEN UNIT
1 : MULTI-VISION SYSTEM
2 : PROJECTOR UNIT
5 : COLOR PROCESSING UNIT
4 : CHROMATICITY SENSOR
7 : COLOR CONVERSION COEFFICIENT CALCULATION UNIT
6 : SYSTEM CONTROL UNIT
8 : CALIBRATION UNIT
9 : EXPANDER
IMAGE SIGNAL ANALOG INPUT

1. A multi-vision system including a plurality of display units, comprising:

a sensor for performing colorimetry of display colors from the plurality of display units;

a color conversion coefficient calculation unit for calculating a color conversion coefficient to calibrate a display color of each display unit using colorimetry values obtained from the sensor by performing calorimetry for the display colors of the plurality of display units; and

a color processing unit for performing a color conversion of the display color of each display unit by using a calculated color conversion coefficient from the color conversion coefficient calculation unit.

US 6,340,977 B1
SYSTEM AND METHOD FOR DYNAMIC ASSISTANCE IN SOFTWARE APPLICATIONS USING BEHAVIOR AND HOST APPLICATION MODELS

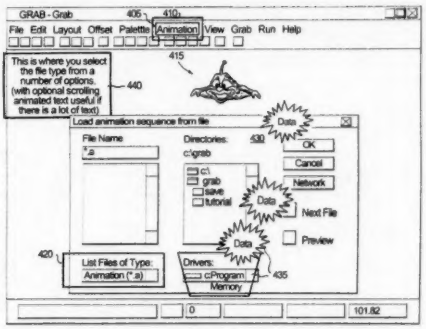
Philip Lui, 55 W. 16th St., # 3, New York, N.Y. 10011, and Zbigniew Kopytnik, 136 Cherry St., Jersey City, N.J. 07305

Filed May 7, 1999, Appl. No. 306,869

Int. Cl. G06F *3/00*

U.S. Cl. 345—709 **43 Claims**

9. A computerized method for assisting a user of a host application being executed within a computer system, the method comprising:



intercepting, during execution of the host application, one or more operating system messages to obtain user input information relating to a plurality of temporally spaced user inputs;

generating a user-interactive dynamic guide sequence for assisting the user in performing a task within the host application, utilizing a host application model and the user input information; and

updating the user-interactive dynamic guide sequence based upon user input information obtained during the execution of the dynamic guide sequence.

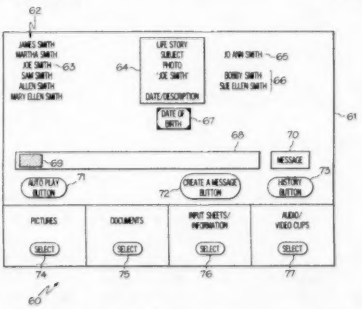
US 6,340,978 B1
METHOD AND APPARATUS FOR RECORDING AND PRESENTING LIFE STORIES

Gordon Scott Mindrum, Cincinnati, Ohio, assignor to Making Everlasting Memories, Ltd., Cincinnati, Ohio

Provisional application No. 60/037,010, filed on Jan. 31, 1997. This application Jan. 30, 1998, Appl. No. 16,825.

Int. Cl. G06F *5/00*

U.S. Cl. 345—764 **18 Claims**



1. An interactive user interface on a computer system for presenting information about an entity, the user interface comprising:

a) a viewable screen image associated with the entity wherein the entity is at lease one of a person, an organization, and an animal;

b) a plurality of life related recordations associated with the entity, the recordations being of at least two different types and being associated with a calendar date;

c) a plurality of selection options on the viewable screen image, each of said selection options corresponding to at least one type of recordation such that when a selection option is selected the corresponding types of recordations are presented;

d) a slidable calendar date selection option on the viewable screen image for selecting a date, said calendar date selection option being associated with at least a portion of the plurality of recordations such that when a specific date is selected the user interface presents one or more recordations which correspond to a selected calendar date;

e) one or more future messages from the entity, the content of the future messages being provided from the entity and directed to the user of the interactive user interface;

f) an access control mechanism preventing access to the future messages until a predetermined calendar date or event, wherein the event or calendar date is dictated by the entity; and

g) a list of relatives to the entity, wherein one or more of the listed relatives has a link to a screen associated with that listed relative.

US 6,340,979 B1

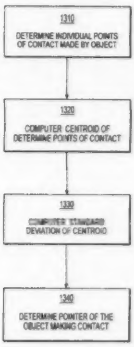
CONTEXTUAL GESTURE INTERFACE

Brian Finlay Beaton, Orleans; Colin Donald Smith, Ottawa; Francois Blouin; Guillaume Comeau, both of Hull, and Arthur Julian Patterson Craddock, Greely, all of Canada, assignors to Nortel Networks Limited, Canada

Continuation of application No. 08/985,261, filed on Dec. 4, 1997, now abandoned. This application Aug. 16, 1999, Appl. No. 374,262.

Int. Cl. G06F *3/14*

U.S. Cl. 345—764 **43 Claims**



1. A method of providing a contextual user interface comprising the steps of:

ascertaining a current user application out of a plurality of applications;

detecting an object making contact with a physical viewing area;

determining which type of object, of a plurality of types of objects, has made contact with the physical viewing area by performing the substeps of:

determining a characteristic of the contact;

determining a rate of change in the amount of pressure imposed by the object on the physical viewing area; and

computing a point size of the contact based on the rate of change in the amount of pressure, thereby determining which type of object of the plurality of types of objects has made contact with the physical viewing area,

and

activating a function corresponding to the contact characteristic, the type of object making contact, and the current user application.

US 6,340,980 B1

COMPUTER USER INTERFACE SYSTEM AND METHOD HAVING BOOK IMAGE FEATURES

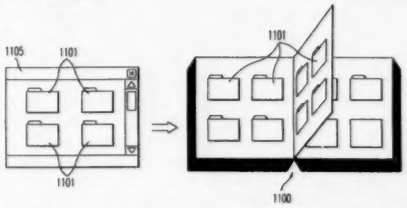
Seng Beng Ho, Unionville, Canada, assignor to E-Book Systems PTE LTD, Singapore, Singapore

Continuation of application No. 08/703,404, filed on Aug. 26, 1996, now Pat. No. 6,064,384. This application May 15, 2000, Appl. No. 571,364.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *3/14*

U.S. Cl. 345—776 **10 Claims**



1. A method for displaying a computer-based set of information on a display screen controlled by a computer-based information browsing device, comprising the steps of:

displaying said set of information as a book image, respective portions of said set of information being displayed as an open page of said book image that overlaps another page that was previously moved from a right side of said book to a left side of said book, and open pages of said book remain at a fixed location with respect to said display screen as different pages of said book image are displayed;

displaying a thickness image of said book image corresponding to an amount of said information on a left side and a right side of said display screen, a left portion of said thickness image displayed on said left side of said screen being proportional to a first amount of the information preceding a point in said set of information currently being displayed and a right portion of said thickness image displayed on said right side of said display screen being proportional to a second amount of information following the point in said set of information currently being displayed;

jumping to a jump position in said set of information corresponding to a current position of an instrument on a sensor device of said computer-based information browsing device; and

displaying a thickness image of pages skipped over in said jumping step to the jump position in the said set of information, showing said thickness image of pages to move across the book image from right to left if the jump position is within the right portion of said thickness image, showing said thickness image of pages to move across the book image from left to right if the jump position is within the left portion of said thickness image, and said thickness being proportional to the number of pages skipped over in said jumping step.

US 6,340,981 B1

METHOD AND APPARATUS FOR STROKE SUBSTITUTION

James Graham, Sunnyvale, and Jerald Evans, Mountain View, both of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 30, 1997, Appl. No. 885,617

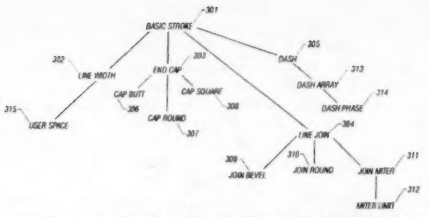
Int. Cl. G09G *5/00*

U.S. Cl. 345—863 **20 Claims**

1. In a computer program for manipulating graphical objects, a method for customizing and substituting stroke outlines and interfaces, using an object oriented architecture, said method comprising:

providing one or more shape, path and stroke object classes;

providing a plurality of stroke rendering operations defined in at least one stroke interface object class using an "interface"



mechanism, wherein said providing said plurality of stroke rendering operations provides a developer with the ability to dynamically insert custom stroke object classes;

providing, in said at least one stroke interface object class, a plurality of attribute variables configured to define control states of said plurality of stroke rendering operations;

obtaining a stroked graphical object class representing a graphical object using an "implements" mechanism to implement said at least one stroke interface object class;

obtaining a representation of a stroke outline of said stroked graphical object defining the boundaries of a stroking primitive along a stroke trajectory;

providing a source of common stroking information associated with said at least one stroked graphical object;

obtaining stroking information of said stroked graphical object using said source of common stroking information;

rendering said graphical object stroke outlines using at least one of said plurality of stroke rendering operations and at least one of said plurality of attribute variables.

US 6,340,982 B1

IMAGE FORMING APPARATUS AND EXPOSURE DEVICE THEREOF

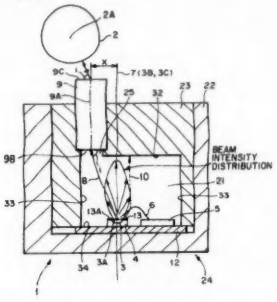
Yoshihiko Taira; Youji Houki; Hirofumi Nakayasu, and Tsutomu Nagatomi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 30, 2000, Appl. No. 608,147

Claims priority, application Japan, Oct. 15, 1999, 11-294150

Int. Cl. B41J *2/385;* **G03G** *13/04*

U.S. Cl. 347—130 **11 Claims**



1. An exposure device for exposing an image supporting body, comprising:

a driver element;

a light emitting diode microchip connected to said driver element by wires and having a light emitting diode array for outputting light for exposure; and

an image forming lens for directing the light output from said light emitting diode array of said light emitting diode microchip onto an image supporting body as exposure light;

said image forming lens being disposed in such a posture that the center line of said image forming lens is out of axial alignment with the center line of intensity distribution of the light output from said light emitting diode array on an incidence surface of said image forming lens,

a center of rotation of said image supporting body being disposed off an extension of the center of intensity distribution of the last-named light output from said light emitting diode array;

said image forming lens assuming a posture such that possible incidence of stray light is reduced when local part of the light output from said light emitting diode array reflects on said wires.

US 6,340,983 B1

MULTI-BEAM IMAGE RECORDING APPARATUS

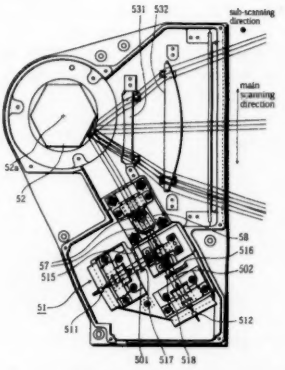
Takatoshi Hamada; Hiroshi Hiraguchi, both of Toyokawa; Masaaki Goto, Toyohashi, and Takeshi Satake, Sakai, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Sep. 24, 1999, Appl. No. 404,590

Claims priority, application Japan, Sep. 25, 1998, 10-272308

Int. Cl. B41J *2/385;* **G03G** *13/04*

U.S. Cl. 347—131 **15 Claims**



1. An image recording apparatus which records an image by scanning a plurality of optical beams across an image carrier, the image recording apparatus comprising:

a storing unit which holds image data to be recorded, as a plurality of sets of line data;

a receiving unit which receives resolution data that indicates a resolution of the image data to be recorded;

a reading unit which reads sets of line data from the storing unit, the sets of line data being determined according to the received resolution data;

a plurality of light emitters which respectively emit optical beams, each optical beam being modulated with a different set of line data read by the reading unit;

a main-direction scanning unit which simultaneously scans the optical beams in a main scanning direction, the optical beams being separated from each other on a surface of the image carrier in a sub-scanning direction that is perpendicular to the main scanning direction;

a diameter changing unit which changes, in accordance with the resolution data, a diameter of a spot formed by each optical beam on the surface of the image carrier, without changing a distance between the optical beams; and

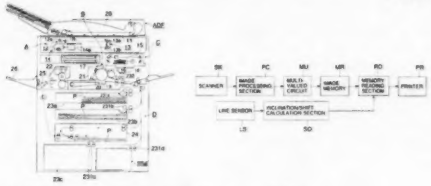
a pitch changing unit which changes, in accordance with the resolution data, a pitch between main-scanning lines on the image carrier in the sub-scanning direction, each main-scanning line being a path of an optical beam that is scanned on the image carrier in the main scanning direction by the main-direction scanning unit.

US 6,340,984 B1

IMAGE FORMING APPARATUS FOR CORRECTING AN ANGLE OF INCLINATION OF THE RECORDING MATERIAL AND FOR RECORDING CORRECTED IMAGE

Makoto Ui, and Fumio Haibara, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 27, 2000, Appl. No. 536,050
Claims priority, application Japan, Mar. 30, 1999, 11-088572
Int. Cl. G03G *15/00*; H04N *1/00*
U.S. Cl. 347—139 7 Claims



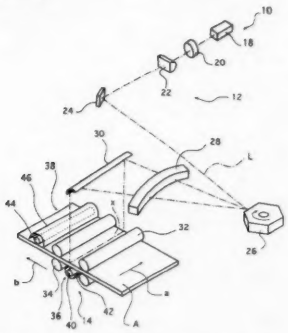
1. An image forming apparatus comprising:
an image memory for storing data;
an image recording device having an image recording position for recording an image onto a recording material;
a conveying device for conveying the recording material to the image recording position;
an image correction device for correcting an angle of image data in accordance with an inclination of the recording material conveyed to the image recording position; and
a recording material inclination memory which stores inclination information of the recording material in the conveying device, wherein the image correction device corrects the angle of the image data on the basis of the inclination information stored in the recording material inclination memory;
wherein an image is recorded on the recording material by the image recording device on the basis of the image data corrected by the image correction device; and
wherein the image forming apparatus does not include a detector for detecting the inclination of the recording material.

US 6,340,985 B1

THERMAL RECORDING APPARATUS

Shinji Imai, Kanagawa, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Dec. 9, 1998, Appl. No. 207,611
Claims priority, application Japan, Dec. 10, 1997, 9-339766
Int. Cl. B41J *2/315*
U.S. Cl. 347—212 26 Claims



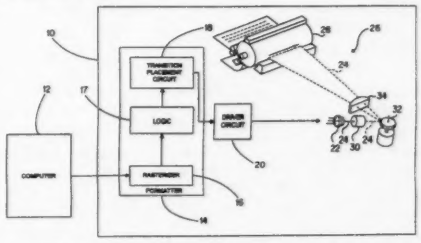
1. A thermal recording apparatus comprising:
pre-heating means for heating a thermal recording material on which an image is to be recorded, to a temperature 6 to 20° C. lower than a color forming temperature;
heat recording means for recording the image by heating the pre-heated thermal recording material imagewise; and
post-heating means for heating the thermal recording material on which the image was recorded, to a temperature lower than the color forming temperature;
wherein the thermal recording apparatus uses the thermal recording material having a thermal image forming layer which comprises a heat-reducing metallic compound, and optionally at least one component selected from a group consisting of a reducing agent of the heat-reducing metallic compound, a dye for infrared absorption and a toner.

US 6,340,986 B1

METHOD AND DEVICE FOR TIME SHIFTING TRANSITIONS IN AN IMAGING DEVICE

Robert D. Morrison, Star, and Eugene A. Roylance, Boise, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 24, 2000, Appl. No. 534,747
Int. Cl. B41J *2/435*
U.S. Cl. 347—249 28 Claims



1. A method for generating a first transition of a first signal in an imaging device, within a first time interval, comprising:
determining a second time interval beginning with a second transition of a second signal and ending with detecting a third signal changing out of a first state;
shifting a predetermined position in time of the first transition with respect to a third transition of the second signal by the second time interval to determine a position in time of the first transition; and
generating the first transition of the first signal at the position.

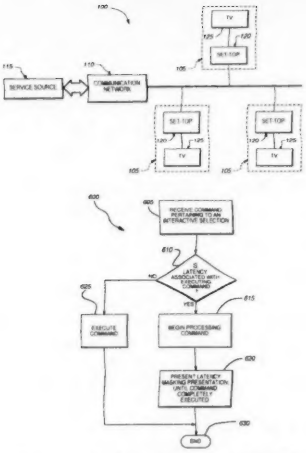
US 6,340,987 B1

METHOD AND APPARATUS FOR MASKING LATENCY IN AN INTERACTIVE TELEVISION NETWORK

Michael T. Hayashi, Aurora, Colo., assignor to Time Warner Entertainment Company L.P., Stamford, Conn.

Filed Dec. 14, 1995, Appl. No. 572,547
Int. Cl. H04N *7/10*; *7/14*
U.S. Cl. 348—13 4 Claims

1. In an interactive television network having a plurality of viewers, a method of masking latency, said method comprising the steps of:
receiving a command pertaining to a given interactive selection from a given viewer;
determining whether latency in presenting said given interactive selection to said given viewer is associated with said command;
if latency is not associated with said command, executing said command and presenting said given interactive selection to said given viewer; and
if latency is associated with said command, beginning execution of said command, temporarily presenting a latency masking



presentation to said given viewer, and thereafter presenting said given interactive selection to said given viewer.

US 6,340,988 B1

METHOD AND APPARATUS FOR DISPLAYING VIDEO DATA FOR TESTING A VIDEO BOARD

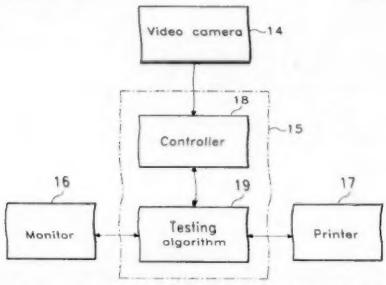
Young-il Jeon, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 4, 1998, Appl. No. 71,539

Claims priority, application Rep. of Korea, May 2, 1997, 97-16976

Int. Cl. H04N *17/00;3/27*

U.S. Cl. 348—180 **24 Claims**



1. A method of displaying video data for testing a video board of a computer, comprising the steps of:

deciding a resolution of a screen to be displayed thereon:

setting a screen mode suitable to the screen resolution;

calculating a total number of dots in horizontal and vertical directions regarding colors to be displayed on the screen by using a total number of horizontal and vertical dots according to the screen resolution decided at said step of setting the screen mode; and

displaying one color among various colors in the horizontal direction and displaying several colors in turn on the screen, wherein said colors are equally divided by a predetermined number in the vertical direction according to a predetermined order;

said method further comprising the step, between said step of calculating the total number of dots and said step of displaying the colors, of detecting an intermediate value of each color from a plurality of colors within a lightness capable of being displayed on the screen, and displaying the detected intermediate value of said each color.

US 6,340,989 B1

MONITORING METHOD WITH A CCD IMAGING DEVICE AND DIGITAL STILL CAMERA USING THE SAME

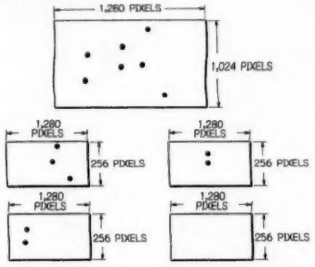
Kazuya Oda, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 11, 1998, Appl. No. 21,859

Claims priority, application Japan, Feb. 13, 1997, 9-028596

Int. Cl. H04N *5/217;9/64;5/222*

U.S. Cl. 348—246 **8 Claims**



1. A monitoring method using a CCD imaging device having a multiphase electrode structure having a plurality of electrodes from which photoelectrically converted charges are output in response to stored charge transfer pulses, said monitoring method comprising the steps of:

switching one or two or more of the plurality of electrodes by a set switch, to thereby output a plurality of vertically thinned pictures which differ from each other in number of omitted lines; and

setting said set switch to select the one or the two or more electrodes capable of producing one picture including a relatively smallest number of pixel defects among the plurality of vertically thinned pictures in a monitor mode.

US 6,340,990 B1

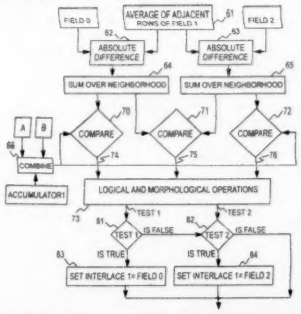
SYSTEM FOR DEINTERLACING TELEVISION SIGNALS FROM CAMERA VIDEO OR FILM

Stephen S. Wilson, Ann Arbor, Mich., assignor to Applied Intelligent Systems Inc., Ann Arbor, Mich., and Electro Scientific Industries, Inc., Portland, Oreg.

Filed Mar. 31, 1998, Appl. No. 52,150

Int. Cl. H04N *7/01;11/20*

U.S. Cl. 348—448 ***12 Claims***



10. A method of detecting motion in video sequences obtained from a video source, each of said video sequences including a plurality of fields, each of said plurality of fields including a plurality of lines, the method comprising:

performing a first motion detection step for detecting areas of motion by comparing said first field with a previous adjacent field;

performing a second motion detection stop for detecting areas of motion by comparing said first field with a following adjacent field; and

performing a third motion detection step for detecting areas of motion by comparing said first field with previous and following adjacent fields and determining that motion is present in said areas if stripes occur.

US 6,340,991 B1

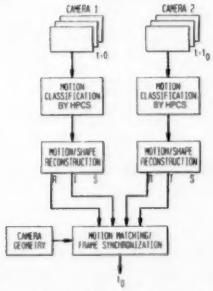
FRAME SYNCHRONIZATION IN A MULTI-CAMERA SYSTEM

Tsuhan Chen, Pittsburgh, Pa.; Sun-Yuan Kung, and Yun-Ting Lin, both of Princeton, N.J., assignors to AT&T Corporation, New York, N.Y.

Filed Dec. 31, 1998, Appl. No. 223,772

Int. Cl. H04N *9/475*

U.S. Cl. 348—513 **2 Claims**



1. A method of synchronizing video frames of a moving object captured from a plurality of video cameras, said method comprising the steps of:

capturing a first sequence of video frames from a first video camera;

capturing a second sequence of video frames from a second video camera;

calculating the time difference between the start of said first sequence of video frames and the start of said second sequence of video frames; and

synchronizing said first sequence of video frames to said second sequence of video frames in accordance with said time difference, wherein said calculating step includes the steps of:

processing said first sequence of video frames to derive a first mathematical model of the motion of said object represented by said first sequence of video frames;

processing said second sequence of video frames to derive a second mathematical model of the motion of said object represented by said second sequence of video frames; and

comparing said first mathematical model to said second mathematical model to calculate said time difference.

US 6,340,992 B1

AUTOMATIC DETECTION OF LETTERBOX AND SUBTITLES IN VIDEO

Vishal Markandey, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

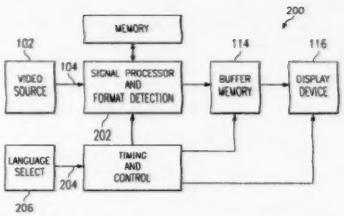
Provisional application No. 60/070,088, filed on Dec. 31, 1997. This application Dec. 29, 1998, Appl. No. 222,452.

Int. Cl. H04N *5/46*

U.S. Cl. 348—556 **20 Claims**

1. A method of processing a video image comprising the steps of:

receiving video image data, said video image data comprising a series of image frames, each said image frame comprised of image data for each pixel in an array;



calculating at least one image data statistic for each line of said array, said image data statistic calculated using only said image data of said line of said array;

locating at least one desired portion of said video image data using said at least one statistic;

scaling said desired portion of said video image data for display on a display device having a pre-determined aspect ratio.

US 6,340,993 B1

AUTOMATIC CLOCK PHASE ADJUSTING DEVICE AND PICTURE DISPLAY EMPLOYING THE SAME

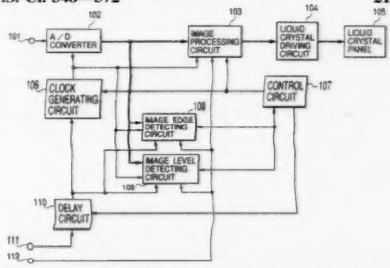
Ryo Hasegawa, Kamakura; Takaaki Matono, Yokohama; Takeshi Sakai, Minami-ku, and Ryuichi Someya, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 20, 1999, Appl. No. 399,223

Claims priority, application Japan, Oct. 20, 1998, 10-298330

Int. Cl. H03M *1/12*

U.S. Cl. 348—572 **21 Claims**



1. A clock phase adjusting device for adjusting phase of a clock signal for timing an operation for converting an analog image signal into a corresponding digital image signal, said clock phase adjusting device comprising:

a delay circuit for delaying phase of the clock signal; and

a control circuit connected to said delay circuit to control phase delay by which said delay circuit delays the phase of the clock signal;

wherein said control circuit controls the phase delay so that the a maximum combined image level can be obtained by combining an image level of a horizontal image starting portion of the digital image signal, and an image level of a horizontal image terminating portion of the digital image signal.

US 6,340,994 B1

SYSTEM AND METHOD FOR USING TEMPORAL GAMMA AND REVERSE SUPER-RESOLUTION TO PROCESS IMAGES FOR USE IN DIGITAL DISPLAY SYSTEMS

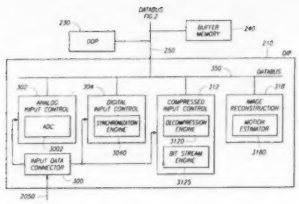
Neal Margulis, Woodside, Calif., and Chad Fogg, Seattle, Wash., assignors to Pixonics, LLC, Palo Alto, Calif.

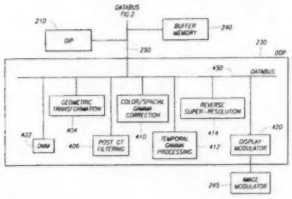
Provisional application No. 60/096,322, filed on Aug. 12, 1998. This application Mar. 26, 1999, Appl. No. 277,100.

Int. Cl. H04N *5/21;9/64*

U.S. Cl. 348—625 **32 Claims**

1. An image processing apparatus for processing bitstream information to provide the video stream image data for use in a display system having a display device, comprising:





a databus;

a display input processor (DIP) coupled to said databus, said DIP comprising a data input connector and a first plurality of processing modules configured to receive said bitstream data through said data input connector and generate DIP outputs therefrom;

a display output processor (DOP) coupled to said databus, said DOP comprising a second plurality of processing modules configured to process said DIP outputs and provide DOP outputs therefrom, said second plurality comprising a temporal gamma processing (TGP) module; and

a buffer memory, coupled to said databus, configured for storing said DIP outputs and said DOP outputs and for providing stored DOP outputs as video stream image data to said display device.

US 6,340,995 B1

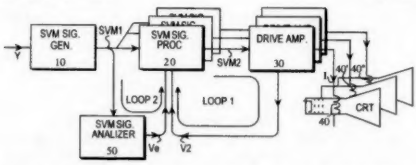
EMISSION CONTROL WITH SCANNING BEAM VELOCITY MODULATION

Jeffrey Owen Allender, Morristown, and Dal Frank Griepentrog, Indianapolis, both of Ind., assignors to Thomson Licensing SA, Boulogne Cedex, France

Filed Nov. 5, 1999, Appl. No. 434,530

Int. Cl. H04N *5/21*

U.S. Cl. 348—626 **16 Claims**



1. An apparatus for scanning beam velocity modulation, comprising:

an scanning velocity modulation signal processor for generating an scanning velocity modulation deflection signal responsive to a scanning velocity modulation signal;

means for supplying a feed forward signal to said processor for controlling said scanning velocity modulation deflection signal amplitude responsive to a component of said scanning velocity modulation signal.

US 6,340,996 B1

γ CORRECTION SYSTEM AND METHOD UTILIZING GRAPH APPROXIMATION

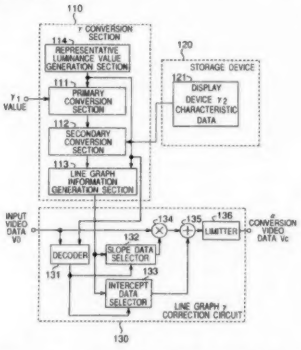
Takahiro Nakamura, Hokkaido, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 5, 1999, Appl. No. 412,509

Claims priority, application Japan, Oct. 6, 1998, 10-283690

Int. Cl. H04N *9/69;5/202*

U.S. Cl. 348—675 **20 Claims**



1. A γ correction circuit for executing reverse γ1 correction on pre- γ1 corrected input video data and then executing γ2 correction, comprising:

means for setting a representative luminance value;

primary conversion means for executing reverse γ1 correction on the representative luminance value so as to generate a primary conversion value;

secondary conversion means for executing γ2 correction on the primary conversion value so as to generate a secondary conversion value;

means for generating a slope and intercept of each straight line of a line graph which pole is the secondary conversion value; and

line graph γ correction means for executing γ correction on said input video data by said line graph.

US 6,340,997 B1

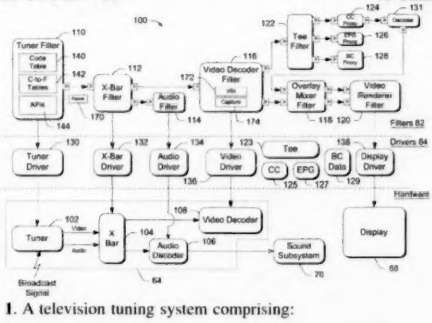
WORLDWIDE TELEVISION TUNING SYSTEM WITH OBJECT-BASED TUNING CONTROL MODULES

Jay Alan Borseth, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Apr. 8, 1998, Appl. No. 57,785

Int. Cl. H04N *3/27;5/46;5/50*

U.S. Cl. 348—731 **40 Claims**



1. A television tuning system comprising:

tuner circuitry to tune to a particular television frequency that carries a television signal;

video decoder circuitry coupled to receive the television signal from the tuner circuitry and to convert the television signal to digital data;

a tuner software module to adjust the tuner circuitry to the particular television frequency;

a video decoder software module to decode the digital data according to a particular video standard;

a tuner driver to interface the tuner software module with the tuner circuitry; and

a video driver to interface the video decoder software module with the video decoder circuitry.

US 6,340,998 B1

THIN FILM TRANSISTOR LIQUID CRYSTAL DISPLAY INCLUDING AT LEAST THREE TRANSISTORS ASSOCIATED WITH AN UNIT PIXEL

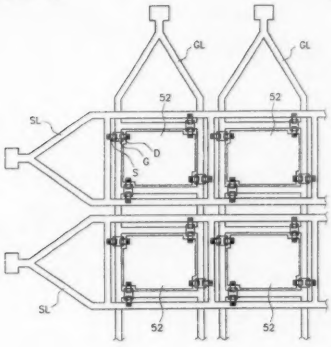
Byung-Hee Kim, Kyonggi-do; Sun Hwa Kim, Seoul; Seung Gon Kang; Hyun Eok Shin, both of Kyonggi-do, and Young Il Choi, Seoul, all of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd, Kyonggi-do, Rep. of Korea

Filed Mar. 29, 1999, Appl. No. 280,037

Claims priority, application Rep. of Korea, May 20, 1998, 98-18105

Int. Cl. G02F *1/136; 1/1333; 1/13*

U.S. Cl. 349—48 **12 Claims**



1. A thin film transistor liquid crystal display having a plurality of unit pixels, comprising:

primary lines and secondary lines to supply scanning signals and data signals respectively wherein each of said primary and secondary lines are branched to form primary branch lines and secondary branch lines, wherein the primary and secondary branch lines are each patterned in a lattice having two vertical sides and two horizontal sides for a unit pixel; and

at least three thin film transistors associated with a unit pixel, each associated transistor being electrically coupled to at least one of the primary branch lines and at least one of the secondary branch lines, wherein the unit pixel is drivable by each of the associated transistors between on and off, wherein no two associated film transistors are directly coupled to a same side of the lattice of the primary branch line, and wherein no two associated film transistors are directly coupled to a same side of the lattice of the secondary branch line.

US 6,340,999 B1

FRONT LIGHT, AND REFLECTIVE TYPE LCD INCLUDING SAME

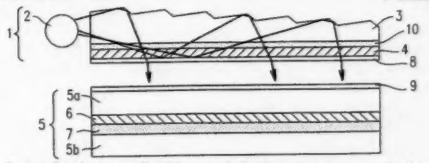
Takeshi Masuda, Kyoto; Yukihiro Sumida, and Tsuyoshi Ebi, both of Nara-ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 10, 1999, Appl. No. 393,298

Claims priority, application Japan, Sep. 14, 1998, 10-260673; Nov. 11, 1998, 10-321072

Int. Cl. G02F *1/1335*

U.S. Cl. 349—63 **4 Claims**



1. A reflective type liquid crystal display apparatus, comprising:

a front light including:

a light source;

a light guide for receiving light from the light source through an end surface of the light guide and outputting the light through a first large surface of the light guide which is substantially perpendicular to the end surface of the light guide; and

a polarization selecting section for selectively transmitting light having particular polarization, the polarization selecting section being attached to the first large surface of the light guide;

a reflective type liquid crystal display device including a plurality of pixels for receiving light from the first large surface of the light guide through the polarization selecting section, controlling polarization of the received light for each of the pixels, and reflecting the polarized light toward the polarization selecting section; and

wherein a second large surface of the light guide opposite said first large surface of the light guide includes periodic concave/convex portions that are formed such that a direction of a stripe thereof is not identical with a horizontal direction of a reflective pixel pattern of the reflective type liquid crystal display device.

US 6,341,000 B1

LIQUID-CRYSTAL PANEL OF POLYMER DISPERSED TYPE AND METHOD OF MANUFACTURING THE SAME

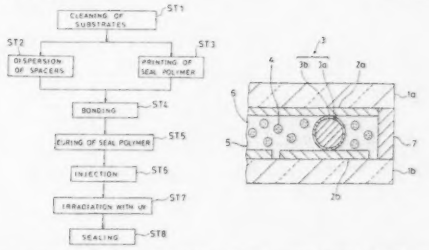
Kazuo Inoue, and Tsuyoshi Uemura, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of application No. 08/834,882, filed on Apr. 7, 1997, now abandoned, which is a continuation of application No. 08/361,550, filed on Dec. 22, 1994. This application Jun. 29, 1998, Appl. No. 106,144.

Claims priority, application Japan, Dec. 27, 1993, 5-330896; Apr. 26, 1994, 6-088191

Int. Cl. G02F *1/1333*

U.S. Cl. 349—93 **4 Claims**



1. A method of manufacturing a liquid-crystal panel of polymer dispersed type, comprising the steps of:

preparing in advance a pair of substrates each being provided with an electrode for applying a voltage and dispersing, on one of said pair of substrates, spacers for holding the substrates at a specified distance, surface portions of said spacers having either a scarce affinity with droplets of a liquid crystal or a large affinity with a polymer member;

holding said substrate on which the spacers are dispersed and the other substrate so that they are opposed to each other with the spacers interposed therebetween, mixing a prepolymer member not containing a crosslinkage-type polymer with said liquid crystal, and filling the mixture into the space between the substrates; and

curing said prepolymer member and forming said polymer member, while causing a phase separation between said polymer member and said liquid crystal simultaneously, so as to separate said liquid crystal in droplets having a mean diameter of 3.0 μm or less, wherein said polymer member comprises a photo-curing polymer and said polymer member is irradiated with light equal to or more intense than 500 mJ/cm^2 in the step of curing said prepolymer member.

US 6,341,001 B1

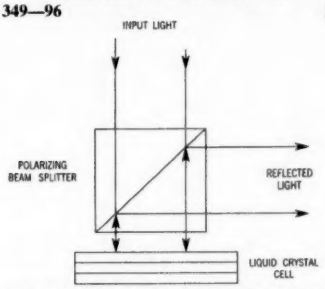
REFLECTIVE ACTIVE MATRIX LIQUID CRYSTAL DISPLAYS WITH MIXED TWISTED NEMATIC AND BIREFRINGENT MODES

Hoi-Sing Kwok, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Varintelligent (BVI) Limited, Tortola, Virgin Islands (Br.), and Terence Leslie Johnson, London, United Kingdom

Provisional application No. 60/110,358, filed on Nov. 30, 1998. This application Nov. 29, 1999, Appl. No. 450,293.

Int. Cl. G02F *1/1335;* **C09K** *19/02*

U.S. Cl. 349—96 **21 Claims**



1. A method of making a single polarizer reflective liquid crystal (LC) display device with α angle a between the polarizer and the input director of the liquid crystal device, twist angle ϕ retardation dΔn, and reflectance R, characterized in that the method comprises:

selecting a value for α and a minimum threshold for desired reflectance; using the equation below to plot the parameter space which satisfies the desired reflectance; and selecting values for ϕ and dΔn from said parameter space:

$$R = \left|(-\sin\sigma\cos\sigma)\cdot H\cdot M(\phi)\cdot H^{-1}\cdot M(-\phi)\cdot\left(\frac{\cos\sigma}{\sin\sigma}\right)^2\right| \quad (1)$$

where H is the rotation matrix

$$H = \begin{bmatrix} \cos\phi & \sin\phi \\ -\sin\phi & \cos\phi \end{bmatrix} \quad (2)$$

where M is the Jones matrix of the liquid crystal cell given by

$$M = \begin{pmatrix} A - iB & -C - iD \\ C - iD & A + iB \end{pmatrix} \quad (3)$$

where

-continued

$$A = \cos\phi\cos\beta d + \frac{q}{\beta}\sin\phi\sin\beta d \quad (4)$$

$$B = \frac{k^c}{\beta}\cos\phi\sin\beta \quad (5)$$

$$C = \sin\phi\cos\beta d - \frac{q}{\beta}\cos\phi\sin\beta d \quad (6)$$

$$D = \frac{k^c}{\beta}\sin\phi\sin\beta d \quad (7)$$

In eq. (4)–(7), q=2π/p, where p is pitch of the LC cell; and

$$\beta=[k_{\alpha}{}^2+q^2]^{1/2} \quad (8)$$

and the pitch is related to ϕ by

$$qd=\phi \quad (9)$$

also

$$k_{\alpha}=\pi\Delta n/\lambda \quad (10)$$

where

$$\Delta n=n_e-n_o \quad (11)$$

US 6,341,002 B1

LIQUID CRYSTAL DISPLAY DEVICE

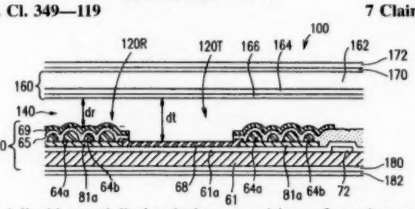
Masahiro Shimizu; Yasuhisa Itoh, and Masumi Kubo, all of Nara-ken, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1999, Appl. No. 418,322

Claims priority, application Japan, Oct. 15, 1998, 10-294311; Mar. 24, 1999, 11-080586

Int. Cl. G02F *1/1335*

U.S. Cl. 349—119 **7 Claims**



1. A liquid crystal display device, comprising: a first substrate, a second substrate, a liquid crystal layer interposed between the first substrate and the second substrate, and a plurality of pixel regions defined by a pair of electrodes for applying a voltage to the liquid crystal layer,

wherein each of the plurality of pixel regions includes a reflection region and a transmission region, and the liquid crystal layer is made of a liquid crystal material having positive dielectric anisotropy,

the device further including:

a first polarizing element provided on the first substrate opposite to the liquid crystal layer;

a second polarizing element provided on the second substrate opposite to the liquid crystal layer;

a first phase difference compensator provided between the first polarizing element and the liquid crystal layer; and

a second phase difference compensator provided between the second polarizing element and the liquid crystal layer,

a twist angle θ_t of the liquid crystal layer being in a range of 0° to 90°,

wherein retardation Rd and the twist angle θ_t in a visible light region of the liquid crystal layer in the reflection region are in ranges within curves respectively represented by the following Formulae (1) and (2), and Formulae (3) and (4), in ranges within curves respectively represented by the

following Formulae (5) and (6) and Formulae (7) and (8) at the twist angle θ_t in a range of $0° \leqq \theta_t \leqq 54.3°$, and in ranges within curves respectively represented by the following Formulae (5) and (8) at the twist angle θ_t in a range of $54.3° < \theta_t \leqq 90°$, and

wherein the retardation Rd and the twist angle θ_t in a visible light region of the liquid crystal layer in the transmission region are in ranges within curves respectively represented by the following Formulae (9) and (10) and Formulae (11) and (12):

$$Rd=-0.0043\cdot\theta_t^2-0.065\cdot\theta_t+1011.8 \quad (1)$$

$$Rd=-0.0089\cdot\theta_t^2+0.1379\cdot\theta_t+914.68 \quad (2)$$

$$Rd=-0.0015\cdot\theta_t^2-0.1612\cdot\theta_t+737.29 \quad (3)$$

$$Rd=-0.0064\cdot\theta_t^2-0.0043\cdot\theta_t+640.65 \quad (4)$$

$$Rd=-0.0178\cdot\theta_t^2+0.2219\cdot\theta_t+458.92 \quad (5)$$

$$Rd=-0.0405\cdot\theta_t^2+0.4045\cdot\theta_t+364.05 \quad (6)$$

$$Rd=0.0347\cdot\theta_t^2-0.4161\cdot\theta_t+186.53 \quad (7)$$

$$Rd=0.0098\cdot\theta_t^2-0.1912\cdot\theta_t+89.873 \quad (8)$$

$$Rd=-0.0043\cdot\theta_t^2-0.065\cdot\theta_t+995.66 \quad (9)$$

$$Rd=-0.0058\cdot\theta_t^2-0.0202\cdot\theta_t+665.8 \quad (10)$$

$$Rd=-0.0248\cdot\theta_t^2+0.6307\cdot\theta_t+439.58 \quad (11)$$

$$Rd=0.0181\cdot\theta_t^2-0.6662\cdot\theta_t+109.51 \quad (12).$$

US 6,341,003 B1

LIQUID CRYSTAL DISPLAY DEVICE IN WHICH THE PIXEL ELECTRODE CROSSES THE COUNTER ELECTRODE

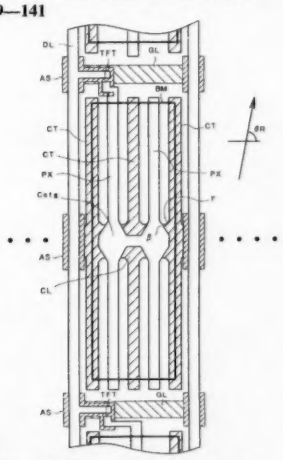
Keiichiro Ashizawa; Masayuki Hikiba, and Masuyuki Ohta, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 21, 1999, Appl. No. 234,494

Claims priority, application Japan, Jan. 23, 1998, 10-011543

Int. Cl. G02F *1/1343; 1/1337*

U.S. Cl. 349—141 **5 Claims**



1. A liquid crystal display device comprising:

first and second substrates;

a liquid crystal composition layer provided between the first and second substrates;

at least one pixel electrode and a counter electrode formed between the first substrate and the liquid crystal composition layer; and

an insulating layer provided between a layer of the at least one pixel electrode and a layer of the counter electrode;

wherein plural pixel electrodes are provided and connected to one another by a connecting member in each pixel, and the connecting member has a first width which is wider near the pixel electrode than a second width between the pixel electrodes.

US 6,341,004 B1

LIQUID CRYSTAL DISPLAY DEVICE WITH COMMON ELECTRODE ARRANGEMENT

Katsumi Kondo, Katsuta; Hiromu Terao, Mito; Hidetoshi Abe; Masuyuki Ohta, both of Katsuta, all of Japan; Kenkichi Suzuki, Oxford, United Kingdom; Tohru Sasaki; Genshiro Kawachi, both of Hitachi, Japan, and Junichi Ohwada, Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 08/908,184, filed on Aug. 7, 1997, now Pat. No. 6,124,915, which is a continuation of application No. 08/744,451, filed on Nov. 6, 1996, now Pat. No. 5,737,051, which is a continuation of application No. 08/123,472, filed on Sep. 20, 1993, now Pat. No. 5,598,285.

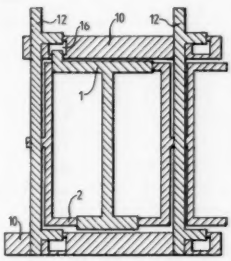
This application Apr. 5, 2000, Appl. No. 543,337.

Claims priority, application Japan, Sep. 18, 1992, 4-249938; Jan. 20, 1993, 5-007355

This patent is subject to a terminal disclaimer.

Int. Cl. G02F *1/1343*

U.S. Cl. 349—141 **10 Claims**



1. A liquid crystal display device comprising:

a pair of substrates;

a liquid crystal layer interposed between said pair of substrates;

a plurality of first common electrodes which extend in a direction and being formed on one substrate of said pair of substrates;

a second common electrode connected to two of said first common electrodes and having a first edge adjacent said plurality of first common electrodes and a second edge opposite to said plurality of first common electrodes;

a first pixel electrode, formed between two of said plurality of first common electrodes and extending in the same direction as the direction of said plurality of first common electrodes; and

a second pixel electrode overlapping said second common electrode, connected to said first pixel electrode and covering at least a portion of the first edge of said second common electrode.

US 6,341,005 B1

METHOD FOR PRODUCING LIQUID CRYSTAL DEVICE WITH CONDUCTORS ARRANGED IN A MATRIX

Chihiro Tanaka, Shimosuwa-machi; Mutsumi Matsuo, Misato-mura; Yoshio Yokouchi, Minoru-machi, and Takeyoshi Ushiki, Shiojiri, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

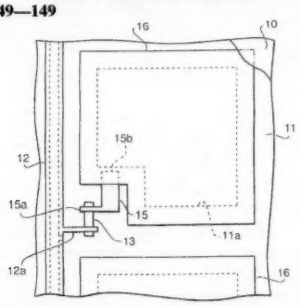
PCT No. PCT/JP98/01628, § 371 Date Dec. 9, 1998, § 102(e) Date Dec. 9, 1998, PCT Pub. No. WO98/45752, PCT Pub. Date Oct. 15, 1998

PCT Filed Apr. 9, 1998, Appl. No. 202,097

Claims priority, application Japan, Apr. 9, 1997, 9-091198

Int. Cl. G02F *1/1343;1/1345*

U.S. Cl. 349—149 **9 Claims**



1. A method for producing a liquid crystal device having a plurality of wiring layers, pixel electrodes formed for each of a plurality of pixels and active elements provided with insulation films connected between the wiring layers and the pixel electrodes, the insulation films being formed by anodic oxidation on electric conductors formed on one of two substrates sandwiching a liquid crystal layer, the method comprising:

forming an energizing pattern on the substrates including the electric conductors and connecting each of the electric conductors via a plurality of continuity paths arranged in a matrix in the energizing pattern;

forming an insulation film by anodic oxidation on the electric conductors by energizing through the energizing pattern; and

eliminating a part of the energizing pattern so as to cut off at least one of the plurality of the continuity paths in the energizing pattern.

US 6,341,006 B1

PROJECTION EXPOSURE APPARATUS

Masayuki Murayama, Kanagawa-ken, and Haruo Ozawa, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of application No. 09/207,270, filed on Dec. 8, 1998, which is a continuation-in-part of application No. 08/972,434, filed on Nov. 18, 1997, which is a continuation of application No. 08/628,452, filed on Apr. 5, 1996, now abandoned. This application Oct. 25, 1999, Appl. No. 422,862.

Claims priority, application Japan, Apr. 7, 1995, 7-108177; Apr. 7, 1995, 7-108178; Dec. 8, 1997, 9-337105

Int. Cl. G03B *27/42*

U.S. Cl. 355—53 **43 Claims**

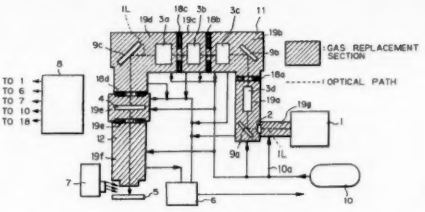
1. A projection exposure apparatus comprising:

an illumination optical system which applies light of a specific wavelength to a mask formed with a pattern;

a projection optical system which projects a pattern image of said illuminated mask onto a substrate;

hermetically sealing device which shuts off from an atmosphere an optical path extending from a light source of said illumination optical system to an end of said projection optical system which is closer to said mask; and

at least one partition device which partitions a space in said hermetically sealing device to form a plurality of hermetic blocks which are to be filled with an inert gas, said at least one partition device being selectively movable between a first position where, when projection exposure is carried out, said partition device allows passage of exposure light and does not shut off said hermetic blocks from each other, and a second position where said partition device shuts off said hermetic blocks from each other when projection exposure is not carried out.



US 6,341,007 B1

EXPOSURE APPARATUS AND METHOD

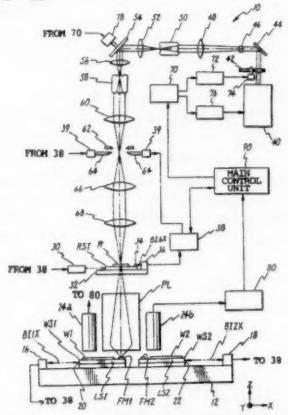
Kenji Nishi, Yokohama, and Kazuya Ota, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of application No. 09/666,407, filed on Sep. 20, 2000, which is a continuation of application No. 08/980,315, filed on Nov. 28, 1997, now abandoned. This application Nov. 20, 2000, Appl. No. 714,943.

Claims priority, application Japan, Nov. 28, 1996, 8-332843; Nov. 28, 1996, 8-332844; Nov. 28, 1996, 8-332845; Nov. 28, 1996, 8-332846; Nov. 28, 1996, 8-332847

Int. Cl. G03B *27/42;27/54;27/32*

U.S. Cl. 355—53 **25 Claims**



14. A projection exposure apparatus for exposing sensitive substrates by projecting a pattern image of a mask onto the sensitive substrates, comprising:

a projection system, disposed in a path of an exposure beam, which projects the pattern image onto the substrate, the mask being provided on one side of the projection system and a sensitive substrate being provided on the other side of the projection system;

a mask stage, disposed on the one side of the projection system, which is movable while holding the mask;

a mask interferometer system, associated with the mask stage, which monitors the mask stage;

a substrate stage system, disposed on the other side of the projection system, which has a first substrate stage and a second substrate stage, each of which is movable independently on a two-dimensional plane while holding a sensitive substrate;

a first interferometer system which monitors the first substrate stage during a first exposure operation in which the mask stage and the first substrate stage are moved synchronously in respective scanning directions based on information obtained by the mask interferometer system and the first interferometer system to expose each of areas on the substrate held on the first substrate stage;

a second interferometer system which monitors the second substrate stage to perform at least one of a substrate exchange operation and a detecting operation of the second substrate stage during the first exposure operation; and

wherein, after the first exposure operation, the first interferometer system monitors the second substrate stage to execute a second exposure operation in which the mask stage and the second substrate stage are moved synchronously in the respective scanning directions based on the information measured by the mask interferometer system and the first interferometer system to expose each of areas on the substrate held on the second substrate stage.

US 6,341,008 B1
PHOTOGRAPHIC COPIER

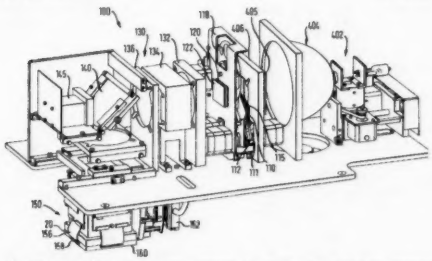
Walter Kraft, Zürich, Switzerland, assignor to Gretag Imaging AG, Switzerland

Filed Aug. 20, 1999, Appl. No. 378,438

Claims priority, application European Pat. Off., Aug. 20, 1998, 98115693

Int. Cl. G03B *27/54;27/72;* **G02F** *1/1345*

U.S. Cl. 355—67 **26 Claims**



1. Photographic copier apparatus for projecting a photographic original onto a light sensitive copy material, comprising:

a light means for emitting light for the projection,

a number of optical, light guiding means for guiding the light along a light path from the light means to the copy material as well as for the projecting of the original onto the light sensitive copy material, and

a liquid crystal matrix through which the light is guided by way of the light guiding means, before it exposes the copy material, whereby the liquid crystal matrix includes a plurality of elements, the transmission of which can be individually changed,

the change in transmission of each element of the liquid crystal matrix being achieved by scattering of the light passing through the element, whereby the degree of the scattering is controllable by application of a voltage,

wherein the liquid crystal matrix comprises:

(a) a first transparent plate and a second transparent plate which are planar and positioned spaced apart parallel;

(b) a liquid crystal fluid which is enclosed between the plates;

(c) a plurality of picture elements (pixels);

(d) first electrodes and second electrodes provided on the first and second plates, respectively, and associated with the picture elements;

(e) feed conductors for feeding control signals to the first and second electrodes;

(f) the first electrodes being located on one side of the first transparent plate;

(g) the feed conductors associated with the first electrodes being located on the other side of the first transparent plate; and

(h) the respective feed conductors being connected with the first electrodes on the other side of the first transparent plate through conductive regions in the first plate, said conductive regions connecting the first electrodes to the feed conductors through the first transparent plate.

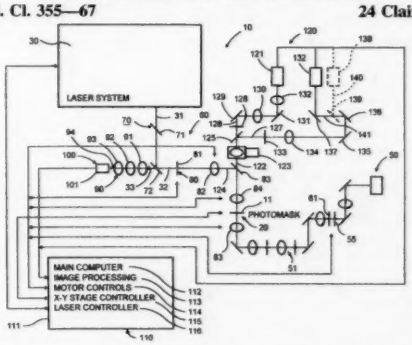
US 6,341,009 B1
LASER DELIVERY SYSTEM AND METHOD FOR PHOTOLITHOGRAPHIC MASK REPAIR

John O'Connor, Commack, and Qiang Fu, Port Jefferson Station, both of N.Y., assignors to Quantronix Corporation, East Setauket, N.Y.

Filed Feb. 24, 2000, Appl. No. 512,580

Int. Cl. G03B *27/54;27/42;27/32;* **G01N** *21/88*

U.S. Cl. 355—67 **24 Claims**



19. A system for photolithographic mask repair which comprises:

a structure for supporting a mask to be operated on;

a laser emitting device for effecting mask repair;

a light source adjacent to the support structure for selected illumination of the mask;

a laser processor for effecting sequential angular manipulation of a laser beam projecting from the laser emitting device;

a computer device for controlling the sequential angular manipulation as to capture a generally complete waveform of the beam; and

a microscope for multi-aspect viewing of the mask during navigation of the beam about the mask.

US 6,341,010 B1
FILM SCANNER

Yuichi Kurosawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 2000, Appl. No. 637,921

Claims priority, application Japan, Aug. 18, 1999, 11-231654

Int. Cl. G03B *27/62;27/52;27/44;13/18;1/00*

U.S. Cl. 355—75 **14 Claims**

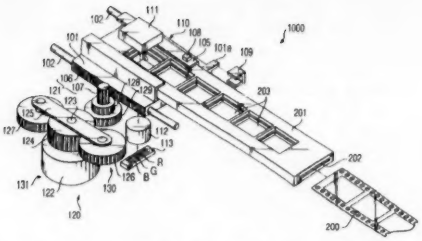
1. A film scanner for scanning an image formed on a film, comprising:

a line sensor that scans the image in a main scanning direction;

a table supporting the film, said table being slidable forwardly and reversely in an auxiliary scanning direction that is perpendicular to the main scanning direction;

a driving source generating a driving force;

a table driving mechanism that drives said table in the auxiliary scanning direction;



a geared transmission that receives the driving force of said driving source and outputs, to said table driving mechanism, one of a first and a second driving force,

the first driving force being a force with which the table driving mechanism drives said table in a forward direction at a first speed,

the second driving force being a force with which the table driving mechanism drives said table in a reverse direction at a second speed that is different from the first speed;

said geared transmission including a planet clutch provided with:

a sun gear secured to a driving shaft of said driving source;

first and second planet gears meshing with said sun gear, said first and second planet gears being rotatable around said sun gear in association with the rotation of said sun gear; and

first and second driven gears, said first and second driven gears having different numbers of teeth, said first planet gear meshing with said first driven gear when said sun gear rotates forwardly, said second planet gear meshing with said second driven gear when said sun gear rotates reversely.

US 6,341,011 B1

EXPOSURE METHOD

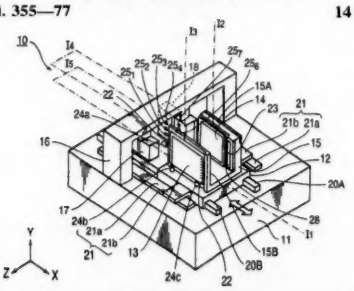
Kei Nara, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of application No. 09/088,571, filed on Jun. 2, 1998. This application Jun. 23, 2000, Appl. No. 603,299.

Claims priority, application Japan, Jun. 3, 1997, 9-160621

Int. Cl. G03B *27/32;27/54;27/42*

U.S. Cl. 355—77 **14 Claims**



5. An exposure method for exposing a photosensitive substrate with incident light that passes through a mask including a pattern and an integrally formed reference mark and a projection optical system, comprising the steps of:

measuring a positional relationship between an image formed by said mask reference mark that becomes incident on a substrate stage and a corresponding substrate stage mark disposed on said substrate stage; and

adjusting said projection optical system to effect a desired positional relationship between said image formed by said mask reference mark and said corresponding substrate stage mark disposed on said substrate stage.

US 6,341,012 B1

RANGEFINDER APPARATUS AND RANGEFINDING LIGHT-DETECTING DEVICE

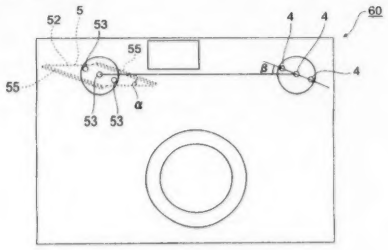
Hideo Yoshida, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Oct. 31, 2000, Appl. No. 702,133

Claims priority, application Japan, Nov. 1, 1999, 11-311200; Nov. 1, 1999, 11-311615; Nov. 1, 1999, 11-311626; Nov. 1, 1999, 11-311631

Int. Cl. G01C *3/00;* **G03B** *13/00;13/34*

U.S. Cl. 356—3.04 **12 Claims**



1. A rangefinder apparatus comprising:

a plurality of light-projecting means for projecting respective light beams toward a target object; and

light-detecting means, disposed at a distance from said light-projecting means, having a light-detecting region for detecting respective reflected light of the light beams projected to the target object, said light-detecting region having a substantially parallelogram shape with no rectangular corners.

US 6,341,013 B1

METHOD AND DEVICE FOR REGULATING THE ATTITUDE OF A MOTOR VEHICLE

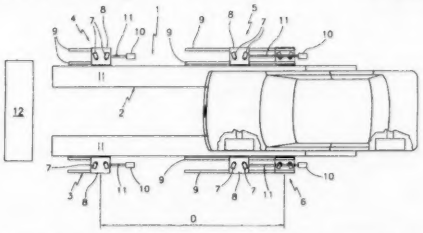
Roberto Battiti, Trento, and Remo Corghi, Correggio, both of Italy, assignors to Corghi S.p.A., Reggio Emilia, Italy

Filed Jul. 31, 1998, Appl. No. 126,744

Claims priority, application Italy, Aug. 1, 1997, RE97A0055

Int. Cl. G01B *11/26*

U.S. Cl. 356—139.09 **10 Claims**



1. A method for regulating the attitude of a motor vehicle by measuring the characteristic angles of the wheels, comprising the following operations:

obtaining at least one pair of images of each moving wheel while the vehicle is being positioned on a measuring site;

calculating for each image the ellipse resulting from an interpolation of a discrete number of points lying on the image;

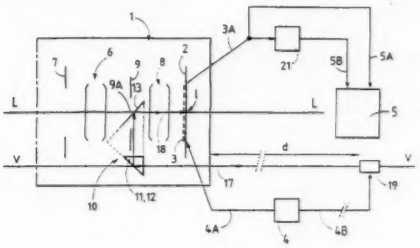
establishing a correspondence between the points identified in each pair of images, to uniquely determine an edge of the wheel rim and a spatial position of the wheel rim; and

calculating the value of the characteristic attitude angles relative to the spatial position of the wheel rim.

US 6,341,014 B1
METHOD OF AND A SYSTEM FOR DETECTING ERRORS IN HARMONIZING THE AXIS OF AN OPTICAL INSTRUMENT

Gilles Maurel, Le Cannet, and Guy Henri Abel Cerutti-Maori, Cannes la Bocca, both of France, assignors to Alcatel, Paris, France

Filed May 10, 2000, Appl. No. 567,441
Claims priority, application France, May 12, 1999, 99 06100
Int. Cl. G01B *11/26;* **G01C** *1/00*
U.S. Cl. 356—152.1 **16 Claims**



1. A method of detecting errors in harmonizing the optical axis (L—L) of an optical instrument (**1**) relative to a reference direction (V—V), characterized in that:

said reference direction (V—V) is materialized by a reference light beam (**17**); and

said optical instrument (**1**) incorporates:

an optoelectronic detector (**3**) disposed in the focal plane (**2**) of said optical instrument (**1**);

an a focal optical system (**6**) coaxial with the optical axis (L—L) of said optical instrument (**1**) and which has a real entry pupil (**7**) and forms a real image (**9**) thereof; and

an invariant optical axis translation system (**10**) disposed in the vicinity of said real image of the entry pupil (**9**), said invariant system (**10**) receiving said reference light beam (**17**) and, regardless of the angle of incidence of said beam, generating an exit light beam (**18**) which is parallel to said reference beam (**17**) and which is directed towards said optoelectronic detector (**3**) from at least approximately the center (**9A**) of said real image (**9**) of the entry pupil, said optoelectronic detector (**3**) delivering an electrical signal representative of the eccentricity of the light spot (v; **23**) formed by said exit beam (**18**) in said focal plane (**2**) relative to the point (**1**) at which the optical axis (L—L) of said instrument (**1**) passes through said optical plane (**2**).

US 6,341,015 B2
COMPENSATION FOR MEASUREMENT UNCERTAINTY DUE TO ATMOSPHERIC EFFECTS

Lyle Shirley, Boxboro, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of application No. 09/325,177, filed on Jun. 3, 1999, now Pat. No. 6,229,619, which is a continuation-in-part of application No. 09/241,354, filed on Feb. 2, 1999, now Pat. No. 6,031,612, which is a continuation-in-part of application No. 08/600,216, filed on Feb. 12, 1996, now Pat. No. 5,870,191, Provisional application No. 60/087,960, filed on Jun. 4, 1998. This application Mar. 7, 2001, Appl. No. 800,984.
Int. Cl. G01B *9/02*
U.S. Cl. 356—517 **26 Claims**

1. A method for compensating for measurement error due to refractive index variations in a measurement environment, said method comprising the steps of:

providing radiation;

separating said radiation into a first linearly polarized component and a second linearly polarized component;

irradiating a target reflector with said first linearly polarized component and said second linearly polarized component through said measurement environment;

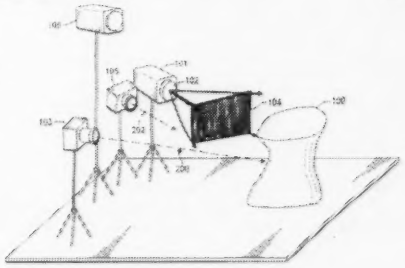
combining said first linearly polarized component and said second linearly polarized component to generate optical interference; and

detecting said optical interference to generate a signal having substantially reduced measurement error due to said refractive index variations in said measurement environment.

US 6,341,016 B1
METHOD AND APPARATUS FOR MEASURING THREE-DIMENSIONAL SHAPE OF OBJECT

Michael Malione, P.O. Box 431, San Francisco, Calif. 94104

Provisional application No. 60/147,660, filed on Aug. 6, 1999. This application Aug. 4, 2000, Appl. No. 633,522.
Int. Cl. G01B *11/24*
U.S. Cl. 356—603 **9 Claims**



1. A method for determining the three-dimensional characteristics of an object, comprising the steps of:

illuminating at least a surface portion of said object with radiant energy, said radiant energy being directed through a color pattern to provide a first color image, said color pattern including a plurality of substantially vertical color strips, each of said color strips having varying hue;

obtaining at least one first two-dimensional image of said illuminated surface portion of said object at a first position, said illuminated surface portion including said first color image;

illuminating said surface portion of said object with a second light, said second light comprising substantially white light, said second light providing a second light image;

obtaining at least one second two-dimensional image of said surface portion of said object illuminated by said second light, said two-dimensional image being obtained at said first position;

determining the originated hue in said color pattern at a plurality of points in said first color image;

determining a tag for each of said points in said color image;

determining the position of each of said points on a respective one of said tags, and

triangulating said point positions to generate a three-dimensional model of said surface portion of said object.

US 6,341,017 B1

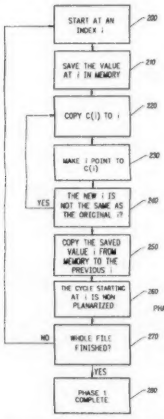
INTERLEAVED-TO-PLANAR DATA CONVERSION

Bernard G. Jackson, Atherton, Calif., assignor to Electronics for Imaging, Inc., Foster City, Calif.

Continuation of application No. 08/775,791, filed on Dec. 31, 1996, now Pat. No. 5,867,179. This application Oct. 27, 1998, Appl. No. 181,073.

Int. Cl. G06K *15/00*

U.S. Cl. 358—1.17 **6 Claims**



1. A method for converting interleaved data to a planar format, comprising the steps of:

following a first map cycle throughout a frame buffer during a first phase;

finding additional map cycles and mapping through said frame buffer during a second phase;

mapping all remaining cycles during a third phase;

iterating a function, 4N, that maps planar addresses to interleaved addresses to effect said interleaved to planar data format conversion;

saving the contents of the first address of a conversion cycle; and

wherein said function performs the remainder of said conversion cycle within said frame buffer.

US 6,341,018 B1

PREPROCESSING METHOD FOR A VARIABLE DATA PRINT JOB SYSTEM

Ramgopal Vidyanand, Cupertino, Calif.; James K. Schwarz, Jr., Boulder, Colo., and Margaret Motamed, Foster City, Calif., assignors to Electronics for Imaging, Inc., Foster City, Calif.

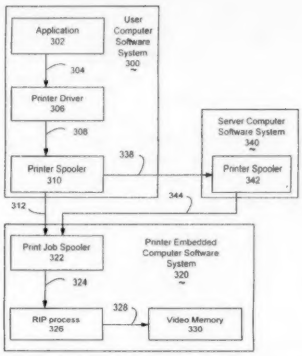
Continuation-in-part of application No. 09/312,908, filed on May 17, 1999, and a continuation-in-part of application No. 09/298,639, filed on Apr. 23, 1999. This application Jan. 11, 2000, Appl. No. 481,736.

Int. Cl. B41B *15/00*; **B41J** *15/00*; **G06F** *15/00*

U.S. Cl. 358—1.18 **36 Claims**

1. A method of translating a print object stream containing a succession of print objects into a print job stream containing print job objects, comprising the steps of:

examining said print object stream to create a collection of at least one master record; and



processing said print object stream to create variable data objects as instances of at least one of said master record of said collection of said master records in said print job stream.

US 6,341,019 B1

METHOD AND APPARATUS FOR PROCESSING AN IMAGE

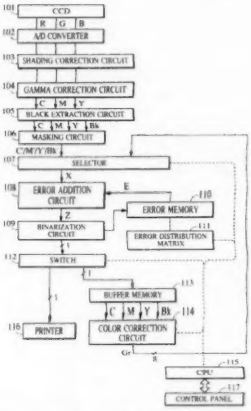
Kenichi Ohta, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1998, Appl. No. 88,757

Claims priority, application Japan, Jun. 12, 1997, 9-155066

Int. Cl. G06K *15/02*; **H04N** *1/48*;*1/56*

U.S. Cl. 358—1.9 **7 Claims**



1. An image processing method for performing correction in accordance with input color correction information of n-level color data, said method comprising the steps of:

inputting said color correction information;

setting data in a look-up table associated with conversion of the n-level color data to m-level color data, in accordance with the input color correction information;

converting the n-level data to m-level data by using the set look-up table; and

performing quantization processing to the converted m-level data while preserving a density of an image in the quantization processing,

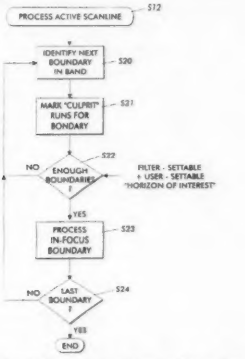
wherein, when the input color correction information indicates that a color is to be enhanced, a data level of the look-up table corresponding to the color to be enhanced is set to more than m.

US 6,341,020 B1

ANAMORPHIC OBJECT OPTIMIZED FUNCTION APPLICATION FOR PRINTER DEFECT PRE-COMPENSATION

David E. Rumph, Pasadena, Calif.; Eric S. Nickell, Quezon City, Poland, and Robert M. Coleman, Altadena, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1998, Appl. No. 222,486
Int. Cl. B41B 1/00; G06K 9/00
U.S. Cl. 358—1.9 12 Claims



1. A method of printing to a printer with a known potential printing defect by processing digital data which specifies attributes for points on a page, said attributes including at least one of color value and rendering intent, including the steps of:

detecting a pattern in said data which is predicted to cause said printing defect, said pattern including an edge between at least two pixels with different said attributes,

applying a function to change at least one attribute of at least one of said pixels, said function including a distance of said pixel from said edge, and

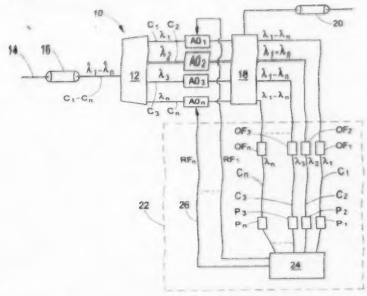
sending said changed pattern to said printer for printing.

US 6,341,021 B1

DYNAMIC POWER EQUALIZATION OF MANY WAVELENGTH-DIVISION-MULTIPLEXED CHANNELS IN A FIBER-OPTIC SYSTEM

Alan E. Wilner, Los Angeles, Calif.; David A. Smith, Shaker Heights, Ohio; Jin-Xin Cai, Los Angeles, Calif.; Kai-Ming Feng, Alhambra, Calif.; Xingyu Zou, San Jose, Calif., and Shouhua Huang, Huntington Beach, Calif., assignors to Case Western Reserve University, Cleveland, Ohio

Provisional application No. 60/037,757, filed on Feb. 13, 1997.
This application Feb. 13, 1998, Appl. No. 23,741.
Int. Cl. H04J 14/02
U.S. Cl. 359—124 20 Claims



1. A dynamic power equalization module for an optical network comprising:

a wavelength-division-multiplexer having an optical input for receiving an optical data transmission containing a plurality of different channels each with correspondingly different wavelengths, wherein the wavelength-division-multiplexer spectrally separates the optical data transmission received by the optical input into parallel optical outputs which correspond to the different channels;

a parallel array of acousto-optic modulators driven by RF acoustic signals connected to the optical outputs of the wavelength-division-multiplexer;

a coupler which passively combines optical outputs from the parallel array of acousto-optic modulators such that the combined optical outputs from the parallel array of acousto-optic modulators is relayed to a plurality of coupler outputs corresponding to a feedback loop for the different channels and at least one coupler output corresponding to a dynamic power equalization module output;

a plurality of optical filters connected to the coupler outputs corresponding to the feedback loop, each optical filter filtering out wavelengths that do not correspond to the channel in which they are being transmitted;

a plurality photodetectors each receiving an output from corresponding optical filters such that the plurality of photodetectors produce signals representative of powers of the different channels; and,

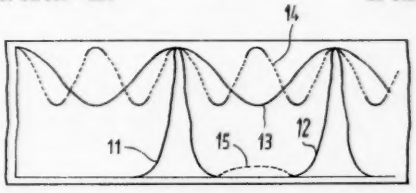
a dynamic control circuit which compares the signals produced by the plurality of photodetectors to determine relative power of the different channels and generates the RF acoustic signals that drive the parallel array of acousto-optic modulators such that each acousto-optic modulator dynamically controls each channels' transmission and reduces its power level to be substantially the same as that of a reference channel.

US 6,341,022 B1

OPTICAL FIBER TRANSMISSION SYSTEM USING SOLITON SIGNALS WITH WAVELENGTH DIVISION MULTIPLEXING

Olivier Leclerc, Saint Michel sur Orge, and Patrick Brindel, Longpont sur Orge, both of France, assignors to Alcatel, Paris, France

Filed Oct. 15, 1998, Appl. No. 172,867
Claims priority, application France, Oct. 16, 1997, 97 12985
Int. Cl. H04J 14/02
U.S. Cl. 359—124 21 Claims



1. An optical fiber transmission system using soliton signals with wavelength division multiplexing having a clock period T, in which the wavelengths, λ_1 to λ_n, of the various channels of the multiplex are selected in such a manner that at least at one point in the transmission system, the difference between the bit times of any two channels of the multiplex is substantially equal to a fraction kT/N of the clock period, where k and N are integers,

the system including, at least at said point, a synchronous modulator for modulating the soliton signals at a frequency N/T which is a multiple of the soliton clock frequency 1/T.

US 6,341,023 B1

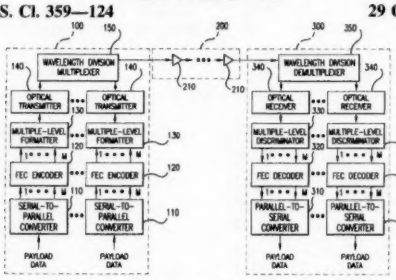
MULTIPLE LEVEL MODULATION IN A WAVELENGTH-DIVISION MULTIPLEXING (WDM) SYSTEMS

Andrej B. Puc, Atlantic Highlands, N.J., assignor to TyCom (US) Inc., Morristown, N.J.

Filed Jul. 23, 1999, Appl. No. 359,122

Int. Cl. H04J *14/02*

U.S. Cl. 359—124 **29 Claims**



7. A transmitter for sending optical signals modulated with data, said transmitter coupled to a fiber link having a property of including nonlinear distortion of the optical signals as a function of signal power of the optical signals and distance traversed in the fiber link, said transmitter comprising:

a plurality of formatters receiving the data and configured to perform multiple-level pulse position modulation (PPM) signaling, each formatter from the plurality of formatters adapted to format data having a preselected M value, said plurality of formatters producing a plurality of formatted signals; and

a multiplexer coupled to said plurality of formatters, said multiplexer receiving the plurality of formatted signals, said multiplexer producing a plurality of wavelength-division multiplex (WDM) channels each carrying optical signals based on the plurality of formatted signals,

the preselected M value of the plurality of formatters being based on signal jitter and maximum signal power.

US 6,341,024 B1

CHANNEL MONITORING APPARATUS IN A WAVELENGTH DIVISION MULTIPLEXING SYSTEM

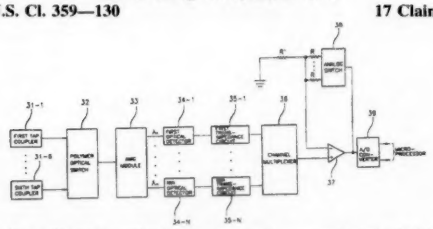
Ku Hong Jeong, Seoul, Rep. of Korea, assignor to LG. Philips LCD Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 22, 1998, Appl. No. 178,034

Claims priority, application Rep. of Korea, Dec. 30, 1997, 97-79470

Int. Cl. H04J *14/02*; **H04B** *10/08*

U.S. Cl. 359—130 **17 Claims**



1. A channel monitoring apparatus in a wavelength division multiplexing (WDM) system, the apparatus comprising:

a plurality of diode means for transmitting optical signals having different unique wavelengths used in the WDM system;

multiplexing means for multiplexing the optical signals received from said plurality of diode means;

at least one amplifying means for amplifying a multiplexed signal received from said multiplexing means;

demultiplexing means for demultiplexing a signal amplified by said at least one amplifying means; and

channel monitoring means for extracting signals at channel monitoring points disposed between said plural amplifying means and hen monitoring existence/non-existence of each channel and detecting gains of said amplifying means with respect to each channel using arrayed waveguide grating (AWG) module, wherein said channel monitoring means comprises:

a plurality of tapping coupler means each for tapping the multiplexed optical signal at a predetermined percent at said each monitoring point;

optical switching means for selecting one of said monitoring points and optically switching an optical signal tapped by a relevant one of said tap coupler means;

AWG means for dividing the optical signal switched by said optical switching means by channels of the WDM system;

a plurality of trans-impedance circuit means for converting the electric signals converted by said detecting means into voltage values proportional to current values of said signals;

channel multiplexing means for selecting one of signals converted by said trans-impedance circuit means;

fourth amplifying means for amplifying the signal selected by said channel multiplexing means;

analog/digital converting means for converting the signal amplified by said fourth amplifying means into a digital signal before applying it to microprocessing means; and

microprocessing means for checking existence/non-existence of each channel and computing gains of said amplifying means with respect to each channel.

US 6,341,025 B1

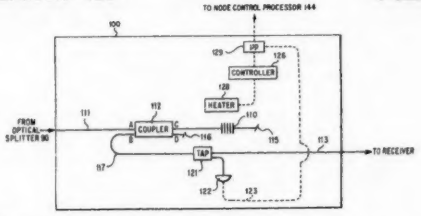
WDM OPTICAL COMMUNICATION SYSTEMS WITH WAVELENGTH-STABILIZED OPTICAL SELECTORS

Victor Mizrahi, Columbia, and Stephen R. Harmon, Severn, both of Md., assignors to Ciena Corporation, Linthicum, Md.

Division of application No. 09/505,329, filed on Feb. 16, 2000, which is a division of application No. 08/848,422, filed on May 8, 1997, now Pat. No. 6,111,681, which is a continuation of application No. 08/605,856, filed on Feb. 23, 1996, now Pat. No. 5,673,129. This application Jan. 8, 2001, Appl. No. 756,159.

Int. Cl. H04J *14/02*

U.S. Cl. 359—130 **5 Claims**



1. An optical device comprising:

a Bragg grating for coupling to an optical waveguide, said Bragg grating having an optical wavelength characteristic and interacting with light transmitted along said optical waveguide;

an optical tap having an input and first and second outputs, said input of said optical tap being coupled to said Bragg grating;

a detector coupled to said first output of said optical tap, said detector generating a sense signal in response to a first portion of said interacted light;

a control element coupled to said detector and said Bragg grating, said control element adjusting said wavelength characteristic in response to said sense signal; and

a receiver circuit coupled to said second output of said optical tap, said receiver being configured to receive a second portion of said interacted light.

US 6,341,026 B1

OPTICAL COMMUNICATION SYSTEM USING OPTICAL PHASE CONJUGATION TO SUPPRESS WAVEFORM DISTORTION CAUSED BY CHROMATIC DISPERSION AND OPTICAL KERR EFFECT

Shigeki Watanabe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

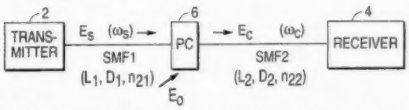
Continuation of application No. 08/724,650, filed on Oct. 1, 1996, now Pat. No. 6,175,435. This application Sep. 12, 2000, Appl. No. 660,471.

Claims priority, application Japan, Nov. 22, 1995, 7-304229

This patent is subject to a terminal disclaimer.

Int. Cl. H04B *10/00*

U.S. Cl. 359—161 **3 Claims**



1. An apparatus for transmitting a light signal, comprising:

a first fiber for transmitting the light signal therethrough;

a phase conjugator which receives the light signal from the first fiber and produces a corresponding phase conjugate light signal; and

a second fiber which receives the phase conjugate light signal from the phase conjugator and transmits the phase conjugate light signal therethrough, wherein

the first and second fibers each have an associated dispersion and optical Kerr effect,

the amount of dispersion of the first fiber is set to be equal to the amount of dispersion of the second fiber, and

the amount of optical Kerr effect of the first fiber is set to be equal to the amount of optical Kerr effect of the second fiber.

US 6,341,027 B1

MODULE FOR OPTICAL COMMUNICATION

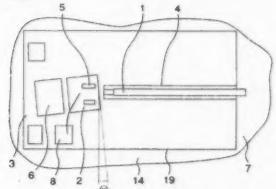
Kimio Tatsuno, Tokyo; Kouji Yoshida, Kokubunji; Takeshi Kato, Akishima; Toshinori Hirataka, Hachioji; Norihiro Yazaki, Takasaki; Shoichi Takahashi, and Hiroshi Naka, both of Komoro, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

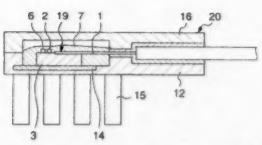
Filed Mar. 10, 1998, Appl. No. 37,541

Claims priority, application Japan, Mar. 13, 1997, 9-059014

Int. Cl. H04B *10/00; 10/04*

U.S. Cl. 359—163 **31 Claims**





1. A module for optical communication, comprising

an optical fiber including an axial-end surface,

an optical element including an optical surface facing to the axial-end surface in such a manner that light is transmitted between the optical surface and the axial-end surface;

a transparent material arranged between the optical surface and the axial-end surface so that the light is transmitted through the transparent material between the optical surface and the axial-end surface; and

a plastic package sealing the optical fiber, the optical element and the transparent material,

wherein the optical surface defines a first plane that is not perpendicular to a direction of a longitudinal axis of the optical fiber at the axial-end surface; and

wherein the axial-end surface defines a second plane that is perpendicular to the longitudinal axis of the optical fiber at the axial-end surface,

wherein the first plane and the second plane have a predetermined angle being substantially larger than zero degrees, wherein the first plane and the second plane may have a further manufacturing error angle,

wherein a distance between the optical surface and the axial-end surface is predetermined; and

wherein a total angle of the predetermined angle and the further manufacturing error angle is larger than 0.5 degrees.

US 6,341,028 B1

JITTER MECHANISM FOR A REAL TIME FINGERPRINT SENSOR AND VERIFICATION SYSTEM

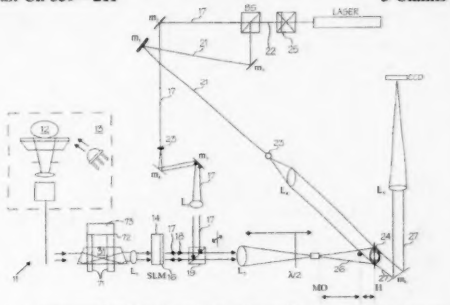
Ramendra D. Bahuguna, and Thomas M. Corboline, both of San Jose, Calif., assignors to Advanced Precision Technology, Inc., Livermore, Calif.

Division of application No. 08/853,850, filed on May 9, 1997, now Pat. No. 6,002,499, which is a continuation-in-part of application No. 08/499,673, filed on Jul. 7, 1995, now Pat. No. 5,629,764, which is a continuation-in-part of application No. 08/694,671, filed on Aug. 9, 1996, now Pat. No. 5,892,599.

This application Nov. 18, 1999, Appl. No. 444,051.

Int. Cl. G02B *26/08*

U.S. Cl. 359—211 **3 Claims**



1. A jitter mechanism for rotationally oscillating and orbiting an optical image projected along a primary optical axis comprising, in combination,

a. optical image rotator element for optically: (i) receiving the image projected along the primary optical axis; (ii) rotating the image; and (iii) projecting the received and rotated image along an output optical axis slightly displaced from and parallel to the primary optical axis;

b. suspension means for supporting the optical image rotator element for slight rotational and slight lateral displacement relative to the output optical axis;

c resilient means for restraining the position of the optical image rotator element within the suspension means to a quiescent equilibrium position with its rotation axis aligned with the output optical axis;

d. perturbing means for perturbing the position of the optical rotator element inducing it: (i) to periodically oscillate rotating relative to the output optical axis, (ii) to elliptically orbit relative to the quiescent equilibrium position and (iii) to precess about the quiescent equilibrium position;

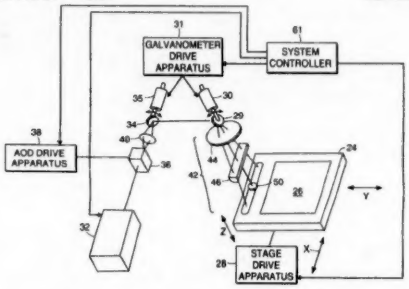
whereby, the received, rotated, and projected optical image jitters, i.e. rotationally oscillates relative to the output optical axis and moves elliptically in an orbit which precesses relative to the quiescent equilibrium position.

US 6,341,029 B1

METHOD AND APPARATUS FOR SHAPING A LASER-BEAM INTENSITY PROFILE BY DITHERING

Timothy Fillion, Bedford; Arkady Savikovsky, Needham, and Jonathan S. Ehrmann, Sudbury, all of Mass., assignors to GSI Lumonics, Inc., Billerica, Mass.

Filed Apr. 27, 1999, Appl. No. 300,549
Int. Cl. G02B *26/08*
U.S. Cl. 359—212 **12 Claims**



1. An optical-radiation patterning device including:

C) a source of a light beam;

D) an optical system that so directs the light beam to a target plane as to form on a substrate surface, if the substrate surface is disposed in the target plane, an anamorphic light spot, the optical system including:

i) a scan deflector that so deflects the light beam as to cause scanning motion of the light spot;

ii) an acousto-optical device that is disposed in the path of the light beam through the optical system and so deflects the light beam as to dither the position of the light spot with respect to the scanning motion thereof; and

wherein said anamorphic light spot is elongated in the direction of the scanning motion of the light spot on said substrate surface.

US 6,341,030 B1

LIGHT BEAM OPTICAL SCANNER AND IMAGE FORMING APPARATUS

Kenji Takeshita, Toyokawa; Jun Kohsaka, Toyohashi, and Yasushi Nagasaka, Okazaki, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jul. 11, 2000, Appl. No. 613,829
Claims priority, application Japan, Jul. 14, 1999, 11-200369
Int. Cl. G02B *26/08*
U.S. Cl. 359—216 **13 Claims**

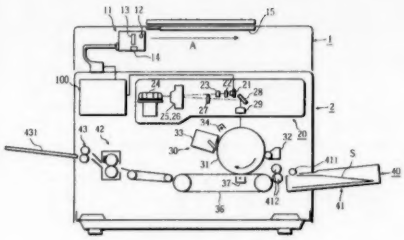
1. A light beam optical scanner, comprising:

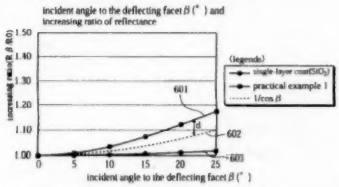
a light source that emits a light beam;

a deflector having a plurality of deflecting facets that have widths smaller than a width of the light beam, at least two of the deflecting facets being irradiated by the light beam and deflecting the light beam;

an optical element that is disposed so that a deflected light beam is applied to the optical element, the deflected light beam being a beam that has been deflected by one of the deflecting facets, the optical element being one of a first optical element through which the deflected light beam passes and a second optical element that reflects the deflected light beam, an incident angle of the deflected light beam applied to an incidence plane of the optical element changing according to an angle of deflection at which the deflecting facet has deflected the light beam; and

a thin film with which at least one of an incidence plane of the first optical element, an incidence plane of the second optical element, an emission plane of the first optical element, and the





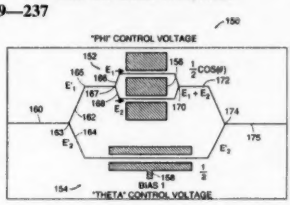
deflecting facet is provided, reflectance and transmissivity of the thin film depending on the incident angle.

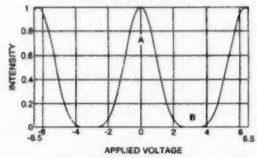
US 6,341,031 B1

OPTICAL PULSE GENERATION USING A HIGH ORDER FUNCTION WAVEGUIDE INTERFEROMETER

Gregory J. McBrien, Cromwell; Karl M. Kissa, Simsbury; Peter Hallemeier, Meriden, and Thomas Joseph Gryk, Windham, all of Conn., assignors to JDS Uniphase Corporation, San Jose, Calif.

Provisional application No. 60/136,196, filed on May 25, 1999. This application Nov. 4, 1999, Appl. No. 428,969.
Int. Cl. G02F *1/00; 1/035*
U.S. Cl. 359—237 **20 Claims**





1. An optical pulse generator having a high order transfer function, the pulse generator comprising:

a) a first interferometric modulator comprising an optical input, an electrical input, a first arm, a second arm and an optical output; and

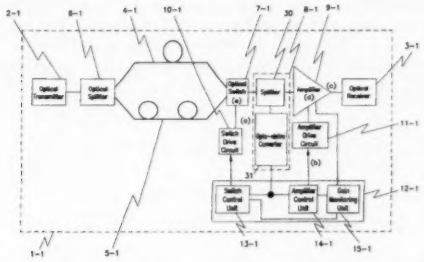
b) a second interferometric modulator comprising an optical input, an electrical input, a first arm, a second arm and an optical output, the second interferometric modulator being optically coupled into the second arm of the first interferometric modulator,

wherein the optical output of the first interferometric modulator generates pulses at a repetition rate that is proportional to a multiple of a frequency of an electrical signal applied to the electrical input of at least one of the first and second interferometric modulator and at a duty cycle that is inversely proportional to the order of the transfer function of the optical pulse generator.

US 6,341,032 B1
METHOD AND SYSTEM FOR REDUCING OPTICAL SURGE

Yasuyuki Fukashiro, Ohta; Hideaki Tsushima, Komae, and Yukio Hayashi, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Yokohama, Japan

Filed Jun. 23, 1999, Appl. No. 338,727
Claims priority, application Japan, Jun. 23, 1998, 10-175581
Int. Cl. H01S *3/00*
U.S. Cl. 359—337 **31 Claims**



1. A method of reducing an optical surge caused by optical amplifiers while switching from a first optical line to a second optical line, comprising the acts of:

detecting a predetermined line switching signal indicative of switching the first optical line to the second optical line;

altering an amplification gain of at least one of the optical amplifiers towards a predetermined safe gain range upon detecting the predetermined line switching signal;

continuously monitoring the amplification gain;

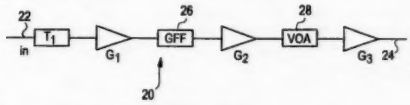
detecting that the amplification gain is within the predetermined safe amplification gain range; and

switching from the first optical line to the second optical line upon detecting the predetermined safe gain range, wherein undesirable effects of the optical surge is substantially reduced to an acceptable level.

US 6,341,033 B1
PERFORMANCE GAIN FLATTENED ERBIUM-DOPED FIBER AMPLIFIERS

Michael J. Yadlowsky, Corning, N.Y., assignor to Corning incorporated

Division of application No. 09/280,440, filed on Mar. 29, 1999, now Pat. No. 6,215,581, Provisional application No. 60/080,127, filed on Mar. 31, 1998. This application Nov. 22, 2000, Appl. No. 721,255.
Int. Cl. H04J *14/02;* **H01S** *3/06;* **G02F** *1/35*
U.S. Cl. 359—337.2 **6 Claims**



1. An optical amplifier comprising:

multiple gain stages arranged serially for providing gain for an optical signal propagating therein, each gain stage comprising a pumped segment of optical waveguide, wherein said optical signals are at least in the 1530 nm to 1560 nm range;

first gain flattening filter reducing a variation in gain of said optical amplifier in a particular wavelength band, and

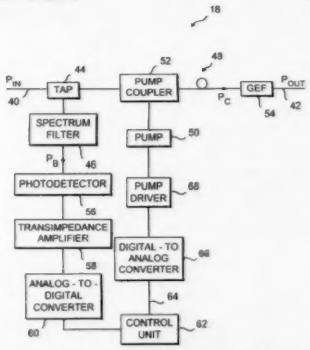
a second gain flattening filter reducing a variation in gain of said optical amplifier,

wherein one of said gain stages is located between said first gain flattening filter and said second gain flattening filter, such that no additional gain flattening filter is located directly adjacent to the first or the second gain flattening filter, wherein said multiple gain stages include a first gain stage G_1 that provides high gain of at least 15 dB.

US 6,341,034 B1
OPTICAL AMPLIFIER SYSTEM WITH TRANSIENT CONTROL USING SPECTRALLY FILTERED INPUT

Yan Sun, Menlo Park, and Jun Ye, Palo Alto, both of Calif., assignors to Onetta Inc., Sunnyvale, Calif.

Provisional application No. 60/240,979, filed on Oct. 18, 2000. This application Nov. 15, 2000, Appl. No. 711,924.
Int. Cl. H04B *10/12*
U.S. Cl. 359—341.41 **38 Claims**



1. An optical amplifier that amplifies optical signals at different wavelengths in a fiber-optic communications link comprising:

an input fiber that receives optical signals to be amplified;

an output fiber with which amplified optical signals are supplied;

at least one rare-earth-doped fiber;

at least one pump that optically pumps the rare-earth-doped fiber to provide optical gain for the optical signals, wherein the optically-pumped rare-earth-doped fiber has a gain spectrum;

an input tap to tap the optical signals at the input fiber;

a spectrum filter coupled to the input tap that modifies the spectrum of the tapped optical signals at the input to provide modified tapped optical signals, wherein the spectrum of the spectrum filter matches the gain spectrum of the rare-earth-doped fiber;

a control unit; and

a photodetector coupled to the spectrum filter that converts the modified tapped optical signals into electrical signals for processing by the control unit, wherein the control unit controls the power of the pump to prevent gain transients using a feed-forward control scheme based on the modified tapped optical signals.

US 6,341,035 B1
CONFOCAL MICROSCOPE

Yasutada Miura, Hachioji, and Nahoko Hisata, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 6, 2000, Appl. No. 611,326
Claims priority, application Japan, Jul. 9, 1999, 11-196733
Int. Cl. G02B *21/06;21/36*
U.S. Cl. 359—363 **16 Claims**

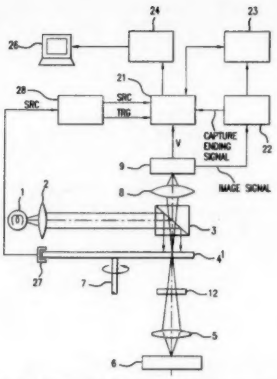
1. A confocal microscope comprising:

a light source emitting a light beam;

an optical system for directing the light beam to the sample;

a rotating object having a transparent portion transmitting the light beam emitted from the light source, and a light-permeable portion which includes transparent and opaque area;

an element for capturing a composite image and a bright field image, the composite image including a confocal image and a



non-confocal image which are captured on the basis of the light beam passing through the light-permeable portion, and the bright field image captured on the basis of the light beam passing through the transparent portion;

an operating element for performing subtraction between the composite image and the bright field image, which are captured alternately while the rotating object is rotating, so as to extract the confocal image;

a detecting part disposed so as to detect whether a newest image being presently captured is the composite image or the bright field image;

a memory for storing the newest image and a last image captured before the newest image;

an image display memory for storing an image data to display on a monitor; and

determining section for determining the direction of subtraction between the newest image and the last image on the basis of the newest image kind;

wherein the operating element performs the subtraction according to the direction of subtraction determined by the determining section whenever the newest image is captured, and then writes a result of subtraction into the image display memory.

US 6,341,036 B1

CONFOCAL MICROSCOPY WITH MULTI-SPECTRAL ENCODING

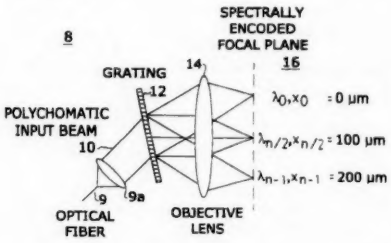
Guillermo J. Tearney, Cambridge; Brett E. Bouma, Quincy, and Robert H. Webb, Lincoln, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

PCT No. PCT/US99/04356, § 371 Date Aug. 24, 2000, § 102(e) Date Aug. 24, 2000, PCT Pub. No. WO99/44089, PCT Pub. Date Sep. 2, 1999

Provisional application No. 60/076,041, filed on Feb. 26, 1998. This PCT application Feb. 26, 1999, Appl. No. 622,971.

Int. Cl. G02B *21/00*

U.S. Cl. 359—368 **32 Claims**



1. A confocal microscope system which comprises a probe movable into a body region of interest, said probe having means for illuminating said region with a confocal spectrum of light extending along one substantially transverse dimension, means for obtaining an image of the region of the specimen by moving said spectrum along another dimension and measuring the reflected confocal spectrum of light.

US 6,341,037 B1

POSITIONING STAGE

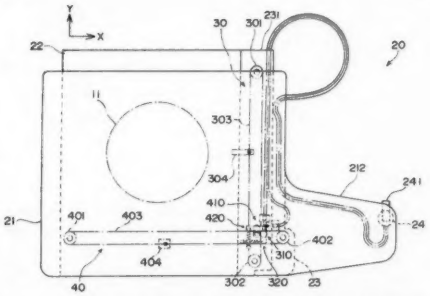
Shoichi Tanaka, and Hidekazu Sano, both of Kawasaki, Japan, assignors to Mitutoyo Corporation, Kawasaki, Japan

Filed Aug. 21, 2000, Appl. No. 641,920

Claims priority, application Japan, Aug. 24, 1999, 11-236884

Int. Cl. G02B *21/26*

U.S. Cl. 359—393 **8 Claims**



1. A positioning stage comprising: a table for a workpiece to be rested; a base for supporting the table; and a feeding mechanism interposed between the table and the base for moving the table relative to the base in a predetermined movement direction along a surface of the table,

the feeding mechanism comprising:

a pair of pulley supported by either one of the table and the base;

a loop-shaped drive force transmission member stretched between the pair of pulley, at least a part of the drive force transmission member extending in the movement direction;

a joint for connecting the other one of the table and the base with a part of the drive force transmission member extending in the movement direction; and

a pinch mechanism provided to the either one of the table and the base for holding a part of the drive force transmission member to drive the drive force transmission member.

US 6,341,038 B1

APPARATUS FOR POLARIZATION CONVERSION

Russell Alan Budd, North Salem; Derek Brian Dove, Mt. Kisco, and Alan Edward Rosenbluth, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 22, 2000, Appl. No. 507,996

Int. Cl. G02B *5/30*

U.S. Cl. 359—487 **6 Claims**

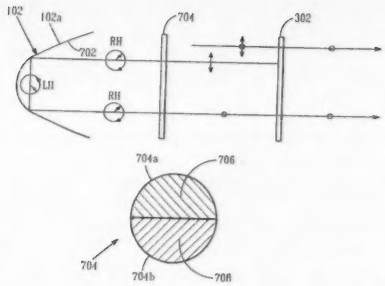
1. An apparatus for polarization conversion comprising:

a light source for supplying vertically and horizontally linearly polarized light to an optical path,

a parabolic mirror disposed in the optical path and proximate to the light source, the parabolic mirror having a mirror coating to induce a phase shift of substantially 0° between incident light and reflected light,

a polarizer means disposed in the optical path for reflecting light of one of the linear polarizations and for transmitting the other linear polarization, and

a ¼ waveplate disposed in the optical path between the polarizer means and the parabolic mirror, the ¼ waveplate having



opposing segments each having quarter wave retardance but having axes which are antiparallel to each other, for converting the reflected linear polarization from the polarizer means to circular polarization through one of the segments before being incident upon the parabolic mirror and for converting the reflected circular polarization from the parabolic mirror to the transmitted polarization through the other segment which is directed towards, and transmitted by, the polarizer means.

US 6,341,039 B1

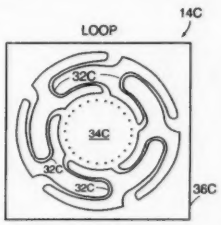
FLEXIBLE MEMBRANE FOR TUNABLE FABRY-PEROT FILTER

Dale C. Flanders; Peter S. Whitney, both of Lexington, Mass., and Michael F. Miller, Hollis, N.H., assignors to Axsun Technologies, Inc., Billerica, Mass.

Provisional application No. 60/186,780, filed on Mar. 3, 2000. This application Aug. 25, 2000, Appl. No. 648,060.

Int. Cl. G02B *27/00;26/00*

U.S. Cl. 359—578 **16 Claims**



1. A reflective surface for defining a cavity in an optical filter comprising:

an outer body portion;

an inner movable membrane portion within the outer body portion, the inner movable membrane portion being movable along an axis of the reflective surface; and

a plurality of flexures connecting the body portion and the membrane portion, the plurality of flexures being formed in a substantially spiral pattern, each flexure comprising at least one curvilinear portion.

US 6,341,040 B1

MULTI-PLATE COMB FILTER AND APPLICATIONS THEREFOR

Kuochou Tai, Fremont, Calif., and Bo Cai, Herts, United Kingdom, assignors to JDS Uniphase Corporation, San Jose, Calif.

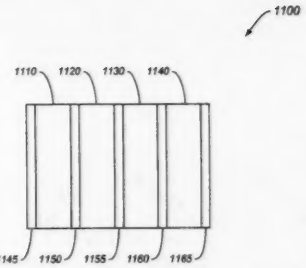
Filed Jun. 8, 1999, Appl. No. 328,037

Int. Cl. G02B *5/28;* **H04J** *14/02*

U.S. Cl. 359—584 **13 Claims**

1. An optical comb filter comprising:

a plurality of class plates; and



a partially reflective material between each of the glass plates, wherein the glass plates and the partially reflective material abut one another to form a glass plate structure, partially reflective material on the front and back surfaces of the glass plate structure, wherein the partially reflective material on the front and the back surfaces of the glass structure have a first reflectivity, the partially reflective material between a first glass plate and a second glass plate has a second reflectivity, the partially reflective material between the second glass plate and a third glass plate has a third reflectivity, the partially reflective material between the third glass plate and a fourth glass plate has the second reflectivity.

US 6,341,041 B1

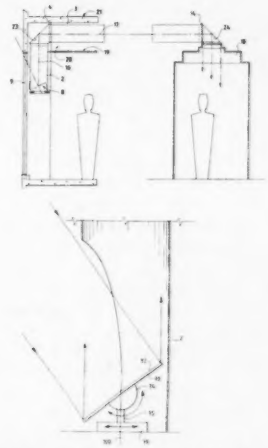
INTERNAL NATURAL LIGHT DELIVERY SYSTEM

Ronald M. Carlson, 213 West Institute Pl.-Suite 203, Chicago, Ill. 60610

Continuation of application No. 09/112,672, filed on Jul. 9, 1998, now abandoned, which is a continuation-in-part of application No. 08/969,237, filed on Nov. 13, 1997, now abandoned, Provisional application No. 60/036,287, filed on Jan. 27, 1997, Provisional application No. 60/034,337, filed on Dec. 23, 1996. This application Jun. 20, 2000, Appl. No. 597,477. This patent is subject to a terminal disclaimer.

Int. Cl. G02B *17/00;27/00;* **E04D** *13/00;* **E04H** *15/10*

U.S. Cl. 359—591 **15 Claims**



1. A natural light delivery system entirely inside a building comprising:

a hollow member having an open end, said open end disposed adjacent an internal surface of a translucent external structure of a building;

a rotatable collector disposed inside said hollow member wherein said collector and hollow member are positioned so

that light rays are directed through said hollow member and into an internal space within said building; and

a sun-tracking element which rotates the collector to face the sun's direct rays.

US 6,341,042 B1

LASER RADIATING APPARATUS AND METHODS FOR MANUFACTURING A POLYCRYSTALLINE SEMICONDUCTOR FILM AND A LIQUID CRYSTAL DISPLAY DEVICE

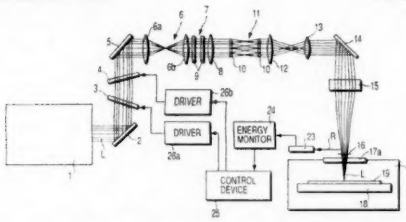
Shigeki Matsunaka, Yokohama; Atsushi Fujihara, Chigaseki, and Tsutomu Kakuno, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 2000, Appl. No. 493,066

Claims priority, application Japan, Jan. 29, 1999, 11-021335

Int. Cl. G02B *27/10;17/00;* **F21V** *29/00*

U.S. Cl. 359—618 **7 Claims**



1. A laser radiating apparatus for controlling an intensity of energy of a laser beam output from a laser generating means and radiating an object with the laser beam, said apparatus comprising:

intensity homogenizing means for substantially homogenizing distribution of the intensity of energy of the laser beam;

converging optical means for condensing the laser beam substantially homogenized by the intensity homogenizing means and radiating the object with the laser beam;

shaping means for removing a part containing the substantially homogenized laser beam of the condensed laser beam and shaping it into a predetermined beam shape;

detecting means for detecting an intensity of energy of the part containing the substantially homogenized laser beam of the laser beam removed by the shaping means; and

control means for controlling the intensity of energy of the laser beam based on a detection signal output from the detecting means.

US 6,341,043 B1

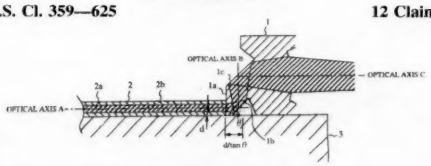
OPTICAL AXIS CONVERSION LENS

Hajime Nakajima, Tokyo, Japan, and Patrick Ruther, Karlsruhe, Germany, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan, and Forschungszentrum Karlsruhe GmbH, Eggenstein-Leopoldshafen, Germany

Continuation of application No. PCT/JP98/04145, filed on Sep. 16, 1998. This application May 9, 2000, Appl. No. 568,180.

Int. Cl. G02B *27/10*

U.S. Cl. 359—625 **12 Claims**



1. An optical axis conversion lens comprising:

a unitary body having first and second generally opposed sides and including

a surface at the first side and having a first optical axis along either direction of which light may be incident on the surface,

a first internal reflector reflecting light within the body between the first optical axis and a second optical axis transverse to the first optical axis, and

a second internal reflector reflecting light within the body between the second optical axis and a third optical axis transverse to the second optical axis; and

converging means at one of the first and second sides for converging light incident on the converging means.

US 6,341,044 B1

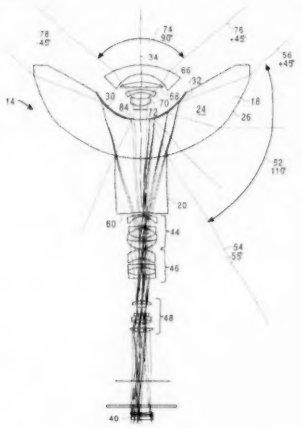
PANORAMIC IMAGING ARRANGEMENT

Edward C. Driscoll, Jr., Portola Valley; Edward P. Wallerstein, Pleasanton; Willard C. Lomax, Sunnyvale; James E. Parris, Pacifica; John Louis Warpakowski Furlan, Palo Alto; Edward V. Bacho, Sunnyvale, and Jorge E. Carbo, Jr., Los Altos, all of Calif., assignors to Be Here Corporation, Cupertino, Calif.

Continuation-in-part of application No. 09/137,660, filed on Aug. 20, 1998, which is a continuation-in-part of application No. 08/872,525, filed on Jun. 11, 1997, Provisional application No. 60/020,292, filed on Jun. 24, 1996. This application Oct. 19, 1998, Appl. No. 175,157.

Int. Cl. G02B *13/06;17/00*

U.S. Cl. 359—725 **20 Claims**



1. A panoramic imaging arrangement comprising:

a lens block having a substantially vertical axis of revolution and capable of receiving light from a first 360° surrounding panoramic scene;

a system of lenses having a vertical axis of revolution substantially coinciding with the axis of revolution of the lens block and positioned to receive light from a second scene, which is at least partially located above the surrounding panoramic scene, the system of lenses projecting light from the second scene; and

wherein the lens block has a convex lower surface through which light from the first, surrounding panoramic scene enters the lens block, the convex lower surface forming a refractive lens.

US 6,341,045 B1

DISK-SHAPED RECORDING MEDIUM AND FORMATTING METHOD THEREOF WHEREIN HISTORIC INFORMATION INCLUDING A STORAGE CAPACITY OF THE DISK-SHAPED RECORDING MEDIUM IS RECORDED THEREON

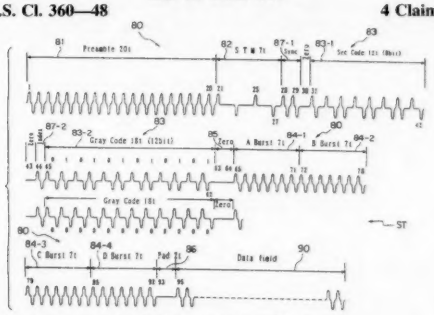
Hisakazu Hironaka, Isehara; Toshiharu Shimizu, Machida; Yoshihide Majima, Hadano; Toshimitsu Itoh, and Hidetsugu Touji, both of Atsugi, all of Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1997, Appl. No. 992,827

Claims priority, application Japan, Dec. 24, 1996, 8-342947; Jan. 14, 1997, 9-004553; Jan. 21, 1997, 9-008808; Feb. 20, 1997, 9-036096

Int. Cl. G11B *5/09*

U.S. Cl. 360—48 **4 Claims**



1. A large-capacity flexible disk comprising:

a disk-shaped magnetic disk medium on which a plurality of tracks are arranged with concentric circles, each track being divided in a circumferential direction into a predetermined number of sectors having a length equal to one another, and each sector comprising a servo field and a data field;

wherein each servo field comprises a number field indicating a position of the sector in which it is provided, and a sector timing mark field preceding the number field and notifying the number field;

wherein the number field includes a space for storing alteration contents of said disk-shaped magnetic disk medium; and

wherein the servo field further comprises, in front of the number field, a preamble field and, behind the number field, a zero field for a phase matching, a plurality of burst fields for detecting position deviation, and a pad field for another phase matching.

US 6,341,046 B1

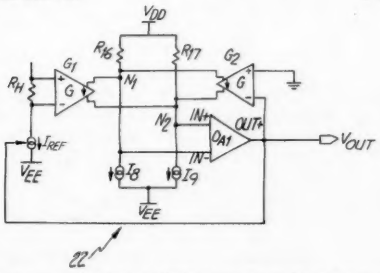
CURRENT BIASING VOLTAGE SENSING PREAMPLIFIER FOR MAGNETORESISTIVE HEADS

Douglas R. Peterson, Minnetonka, Minn., assignor to Agere Systems Guardian Corp., Orlando, Fla.

Filed Apr. 14, 1995, Appl. No. 422,440

Int. Cl. G11B *5/02*

U.S. Cl. 360—67 **1 Claim**



1. In a preamplifier for an MR element, a method of converting a differential output voltage of the MR element to a single-ended voltage, comprising:

providing a parallel circuit having first and second symmetrical branches between first and second voltage sources;

applying the differential output voltage to a first transconductance amplifier to produce a voltage imbalance between the first and second symmetrical branches;

operating a second transconductance amplifier according to the voltage imbalance to restore balance of the first and second symmetrical branches; and

operating a differential amplifier to produce the single-ended voltage based on the voltage imbalance.

US 6,341,047 B1

AV DATA BASE FOR VTR

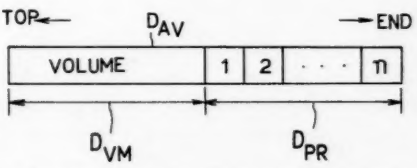
Toshiyuki Ishii; Kousuke Misono, both of Kanagawa; Seiichi Misawa, Saitama; Joji Fukuda; Tetsuo Nishigaki, both of Kanagawa, and Kiyoshi Ota, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of application No. 08/383,614, filed on Feb. 2, 1995, now abandoned, which is a division of application No. 07/643,207, filed on Jan. 18, 1991, now abandoned. This application May 17, 1995, Appl. No. 443,324.

Claims priority, application Japan, Jan. 21, 1990, 2-010864

Int. Cl. G11B *15/087*

U.S. Cl. 360—72.2 **2 Claims**



1. A video tape recorder for recording at least one program on a video tape, comprising:

recording/reproducing means for recording and reproducing signals on the video tape;

input means for receiving said at least one program; and

control means for controlling the recording of said at least one program on said video tape by said recording/reproducing means, said control means being operative to control said recording/reproducing means to record address data in a beginning portion of said video tape representing a recording start point of at least one program to be recorded subsequently to the recording of said address data.

US 6,341,048 B1

METHOD AND APPARATUS FOR SERVO DATA SYNCHRONIZATION IN A DISC DRIVE

John C. Morris, and Dustin M. Cvancara, both of Minneapolis, Minn., assignors to Seagate Technology LLC, Scotts Valley, Calif.

Provisional application No. 60/117,153, filed on Jan. 25, 1999. This application Jan. 20, 2000, Appl. No. 488,377.

Int. Cl. G11B *21/10;5/596*

U.S. Cl. 360—77.08 **13 Claims**

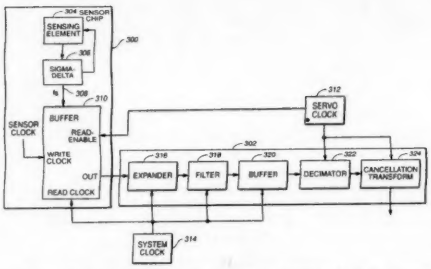
1. A servo loop in a disc drive for positioning a head over a disc, the servo loop comprising:

a head;

an actuator capable of positioning the head based on a control signal and a cancellation signal;

a controller capable of generating a control signal based on position information received from the head at a servo data rate;

a sensor located in the disc drive and capable of generating data describing movement of the disc drive, the sensor producing sensor data samples at a sensor data rate that is different from the servo data rate;



a data enlarger capable of inserting additional data samples between the sensor data samples to produce enlarged data;

a filter capable of filtering the enlarged data to produce filtered data;

a decimator capable of selecting data points from the filtered data set to produce decimated sensor data at the servo data rate; and

a cancellation component capable of generating a cancellation signal at the servo data rate based on the decimated sensor data.

US 6,341,049 B1

CASSETTE LOADING MECHANISM

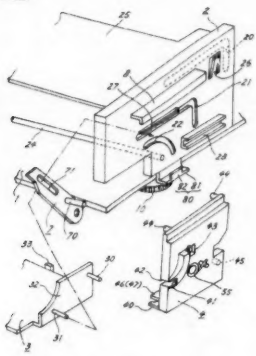
Hiromasa Yamagishi, Ikoma, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 22, 1999, Appl. No. 469,236

Claims priority, application Japan, Dec. 28, 1998, 10-371911

Int. Cl. G11B *15/675*

U.S. Cl. 360—96.5 **3 Claims**



1. A cassette loading mechanism comprising a tray disposed between side plates provided upright on a chassis and movable in a cassette loading direction for holding a cassette, and a loading member mounted on an outer surface of the side plate for driving the tray, the cassette loading mechanism being characterized in that:

the side plate is provided with a first and a second engaging pieces, parallel to each other and corresponding to a first end and a second end of the loading member,

the first end of the loading member thereof corresponding to the first engaging piece has a cutout for permitting the loading member to interlock with said first engaging piece when positioned for mounting on the side plate,

the loading member being mountable on the side plate by fitting the second end, not having the cutout, to the second engaging piece of the side plate and causing the first end of the loading member to clear said first engaging piece at the cutout and to interlock with of the first engaging piece, the loading member being slidable from a mounted position to move within a range in which the loading member is in engagement with the side plate.

US 6,341,050 B1

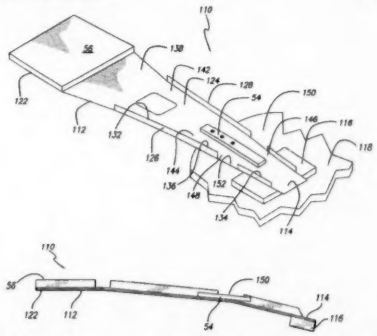
SUSPENSION WITH MODIFIED LOAN BEAM FOR DYNAMIC PITCH CONTROL

Warren Coon, Temecula, Calif., assignor to Magnecomp Corporation, Temecula, Calif.

Division of application No. 09/476,981, filed on Dec. 31, 1999, Provisional application No. 60/154,555, filed on Sep. 17, 1999. This application Jun. 27, 2001, Appl. No. 894,101.

Int. Cl. G11B *5/48*

U.S. Cl. 360—244.9 **8 Claims**



1. A disk drive suspension comprising a load beam and a flexure carrying a slider for contact or not with a disk, said load beam comprising a base portion, a rigid beam portion having rigidity-imparting left and right edge rails comprising rearward, forward and intermediate rail sections, and a spring portion between said base and rigid beam portions, said rigid beam portion having rearward, forward and intermediate beam sections corresponding to said rearward, forward and intermediate rail sections, respectively; said forward beam section extending the length of and mounting said flexure, said rearward beam section being attached to said spring portion, and said intermediate beam section having a locus of articulation formed by opposing discontinuities in said left and right intermediate rail sections, and a stiffener plate attached to said rearward beam section in intermediate beam section overlying relation to block overcenter movement of said intermediate beam section relative to said rearward beam section in the unloaded condition of said suspension, whereby said intermediate section flexes in response to slider contact or not with said disk to maintain said slider at a small positive pitch relative to said disk in the absence of disk operating contact and at a 0° pitch when in disk operating contact under spring portion loading.

US 6,341,051 B2

DISK DRIVE HAVING EXTERNAL SHOCK RESISTANCE

Toshiyuki Hachiya, Higashine; Tomoyoshi Yamada; Hiroshi Takekawa, both of Kawasaki; Takuya Kobayashi, Higashine, and Yuji Sasaki, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

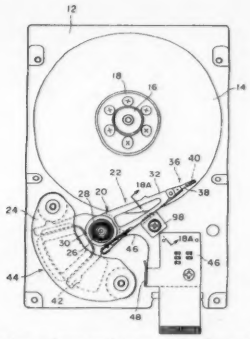
Division of application No. 09/152,811, filed on Sep. 14, 1998, now abandoned. This application Mar. 28, 2000, Appl. No. 536,775.

Claims priority, application Japan, Mar. 16, 1998, 10-065036

Int. Cl. G11B *5/55;17/02*

U.S. Cl. 360—265.1 **12 Claims**

1. A disk drive comprising:



a housing having a base and a cover fixed to said base;

a disk rotatably mounted in said housing and having a plurality of tracks;

a rotating mechanism for rotating said disk;

a head slider having a transducer for reading/writing data on said disk;

an actuator for moving said head slider across said tracks of said disk, said actuator having an actuator arm rotatably mounted on said base; and

a stopper for physically blocking said actuator arm from further radially outward movement when said head slider is aligned to directly oppose an outermost circumferential portion of said disk, said stopper being fixed to said base, said stopper having a groove for receiving the outermost circumferential portion of said disk with a given vertical clearance.

US 6,341,052 B2

MAGNETORESISTIVE ELEMENT INCLUDING A SILICON AND/OR A DIFFUSION CONTROL LAYER

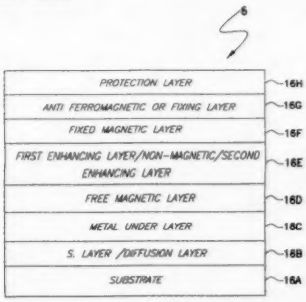
Kazuhiko Hayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 21, 1999, Appl. No. 234,508

Claims priority, application Japan, Jan. 22, 1998, 10-010505

Int. Cl. G11B *5/39*

U.S. Cl. 360—324.1 **17 Claims**



1. A magnetoresistive (MR) effect element including a unit comprising:

a Si layer;

a metal lower layer formed on said Si layer;

a free magnetic layer formed on said metal lower layer;

a nonmagnetic layer formed on said free magnetic layer;

a fixed layer formed on said nonmagnetic layer, said fixed layer being fixed relative to said free magnetic layer; and

a magnetic fixing layer formed on said fixed layer.

US 6,341,053 B1

MAGNETIC TUNNEL JUNCTION ELEMENTS AND THEIR FABRICATION METHOD

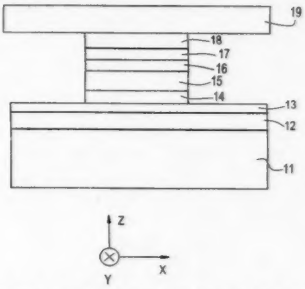
Masafumi Nakada; Hisanao Tsuge; Yuji Tsukamoto; Hisao Matsutera; Nobuyuki Ishiwata, and Atsushi Kamijo, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 30, 1998, Appl. No. 182,671

Claims priority, application Japan, Oct. 30, 1997, 9-298567

Int. Cl. G11B *5/39*

U.S. Cl. 360—324.2 **13 Claims**



1. A magnetic tunnel junction device usable as an external magnetic field sensor, comprising:

a first pinning layer, a ferromagnetic free layer, a tunneling barrier layer, a ferromagnetic pinned layer, and a second pinning layer, which are stacked one on top of the other in this order,

the first pinning layer having a first pinning field, which pins a magnetization of the free layer in a track width direction

the second pinning layer having a second pinning field, which pins a magnetization of the pinned layer in a direction in a plane of the stacked layers, along an applied external magnetic field direction.

US 6,341,054 B1

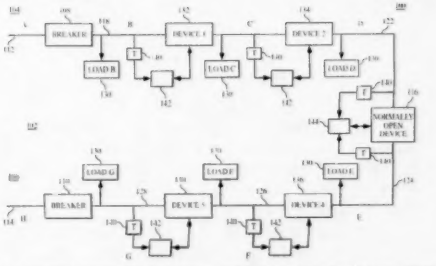
INTELLIGENT POWER DISTRIBUTION NETWORK

Dennis Alan Walder, Oak Creek, and Thomas Gerard Dolnik, South Milwaukee, both of Wis., assignors to McGraw-Edison Company, Houston, Tex.

Provisional application No. 60/113,953, filed on Dec. 23, 1998. This application Dec. 10, 1999, Appl. No. 458,027.

Int. Cl. H02H *3/00*

U.S. Cl. 361—66 **49 Claims**



1. A control system for an intelligent power distribution network including multiple branches, each of which is connected to a power source, electrical devices connected to the branches, and a normally-open device connected between two or more branches, the control system comprising:

control elements, each control element being associated with an electrical device connected to a branch of the distribution network; and

a master control element associated with the normally-open device, the master control element communicating with the control elements and, when a fault occurs on the distribution network:

preventing the normally-open device from closing when information from the control elements indicate that conditions potentially disruptive to the distribution network would occur if the normally-open device were closed, and

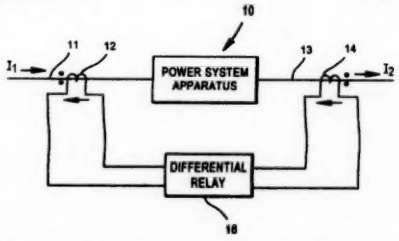
permitting the normally-open device to close when information from the control elements indicate that conditions potentially disruptive to the distribution network would be avoided if the normally-open device were closed.

US 6,341,055 B1

RESTRAINT-TYPE DIFFERENTIAL RELAY

Armando Guzman-Casillas, Pullman, Wash., assignor to Schweitzer Engineering Laboratories, Inc., Pullman, Wash.

Filed Oct. 15, 1999, Appl. No. 418,729
Int. Cl. H02H *3/00*
U.S. Cl. 361—81 **15 Claims**



1. A differential relay for protecting a power system apparatus in a power system, the power system apparatus having a power line input and a power line output, comprising:

means for detecting the power signal current present on the power line input and the power line output, respectively;

differential element means for recognizing a fault condition in the power system external to the power system apparatus;

means for preventing a tripping signal in response to the external fault condition without blocking the differential element; and

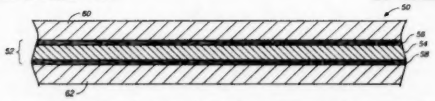
means for recognizing an internal fault, including the evolution of said external fault into an internal fault, and for permitting a tripping action for the internal fault, from the time of recognition of the external fault, without any preestablished time delay.

US 6,341,056 B1

CAPACITOR WITH MULTIPLE-COMPONENT DIELECTRIC AND METHOD OF FABRICATING SAME

Derryl D. J. Allman, Camas, Wash., and Brian Bystedt, Colorado Springs, Colo., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed May 17, 2000, Appl. No. 573,123
Int. Cl. H01G *4/20;4/06*
U.S. Cl. 361—312 **21 Claims**



1. A capacitor having a pair of plates separated by a capacitor dielectric material formed of multiple separate layers of at least two different dielectric materials which have electrical characteristic curves that curve in opposite directions with respect to one another, and a relative thickness of each of the layers being related to a relative extent of a curvature of the electrical characteristic curve of each material.

US 6,341,057 B1

DOUBLE LAYER CAPACITOR AND ITS MANUFACTURING METHOD

Ole Stig Nissen, Odense C; Hans Christian Beck, Odense M, and Michael Schou, Odense C, all of Denmark, assignors to Danionics A/S, Odense, Denmark

PCT No. PCT/EP98/07206, § 371 Date Jun. 30, 2000, § 102(e) Date Jun. 30, 2000, PCT Pub. No. WO99/24995, PCT Pub. Date May 20, 1999
PCT Filed Nov. 4, 1998, Appl. No. 530,870
Claims priority, application Denmark, Nov. 5, 1997, 1257/97
Int. Cl. H01G *9/00*
U.S. Cl. 361—502 **63 Claims**

1. A double layer capacitor which comprises a conductive coating comprising a melamine resin binder, at the interfaces between current collectors and electrodes, the conductive coating is provided from a mixture composed essentially of:

5–50% by weight of carbon blacks;

5–20% by weight of graphite;

5–40% by weight of a melamine resin binder and polymerisation reaction partner;

25–85% by weight of solvent; and

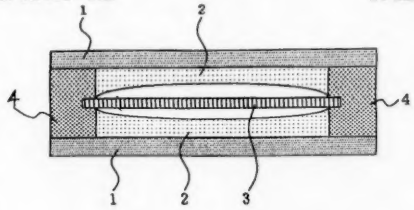
0–10% by weight of auxiliary materials selected from the group consisting of dispersing agents, defoaming agents and rheological control agents.

US 6,341,058 B1

ELECTRIC DOUBLE LAYER CAPACITOR AND METHOD OF FORMING THE SAME

Koji Sakata; Kazuya Mimura, and Yutaka Nakazawa, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 30, 2000, Appl. No. 537,731
Claims priority, application Japan, Mar. 30, 1999, 11-087825
Int. Cl. H01G *9/00*
U.S. Cl. 361—502 **14 Claims**



1. An electric double layer capacitor having a pair of polarized electrodes separated by a separator, said polarized electrodes having surfaces facing to said separator,

wherein substantially entire parts of said surfaces of said polarized electrodes are spaced from said separator to form inner spaces between said polarized electrodes and said separator,

wherein concave portions extend over substantially entire parts of said surfaces of said polarized electrodes.

US 6,341,059 B1

HOLDING DEVICE FOR COMPUTER MEMORY DRIVE CARRIERS

Friedrich Köhler, Meitingen, and Pia Lorenz, Ried, both of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

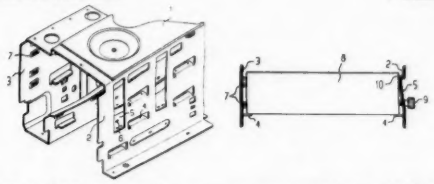
PCT No. PCT/DE98/00848, § 371 Date Jan. 3, 2000, § 102(e) Date Jan. 3, 2000, PCT Pub. No. WO98/43246, PCT Pub. Date Oct. 1, 1998

PCT Filed Mar. 23, 1998, Appl. No. 381,808

Claims priority, application Germany, Mar. 26, 1997, 297 05 507 U

Int. Cl. G06F *1/16*

U.S. Cl. 361—685 **7 Claims**



1. A holding device for computer memory drives, said device comprising a rectangular, cage-like chassis having opposite side walls with inwardly directed guide elements for the acceptance of at least one horizontally introducible drive carrier that can be secured with a screw connection, one of the two side walls having at least one inwardly directed wall projection for every installation location, said wall projection having a supporting edge extending parallel to the insertion direction, the wall projection having an aperture in the region of a threaded bore of a lateral surface of the drive carrier being supported on the wall projection, said aperture receiving a screw applied from the outside to a threaded bore of the drive carrier and the other of the two walls having a spring element provided opposite the one side wall so that the drive carrier pulled against the wall projection with the screw is secured parallel to the insertion direction without play and protected against twisting.

US 6,341,060 B1

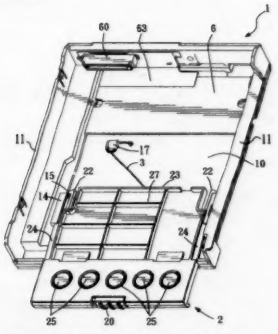
OPTICAL DISK DRIVE ASSEMBLY HAVING A CONTROL PANEL MOUNTED MOVABLY THEREON

Kuei-Chu Chuang, Taipei, Taiwan, assignor to Compal Electronics, Inc., Taipei, Taiwan

Filed Mar. 13, 2000, Appl. No. 524,529

Int. Cl. H05K *5/00*

U.S. Cl. 361—685 **11 Claims**



1. An optical disk drive assembly, comprising:

a hollow housing having a bottom wall, two opposite side walls extending upwardly from two opposite sides of said bottom wall, a rear wall extending upwardly from a rear end of said bottom wall, and a front opening formed at a front end of said bottom wall and opposed to said rear wall;

an optical disk drive mounted inside said hollow housing, said optical disk drive being spaced apart from and being disposed above said bottom wall to define a clearance therebetween; and

a control panel movably received in said clearance, said control panel having a front end, and a plurality of control keys disposed adjacent to said front end of said control panel, and connected electrically to said optical disk drive for manipulation of said optical disk drive, said control panel being movable between a retracted position where said front end of said control panel is retracted into said hollow housing to conceal said control keys in said clearance under said optical disk drive, and an extended position where said front end of said control panel protrudes out of said front opening of said hollow housing to expose said control keys.

US 6,341,061 B1

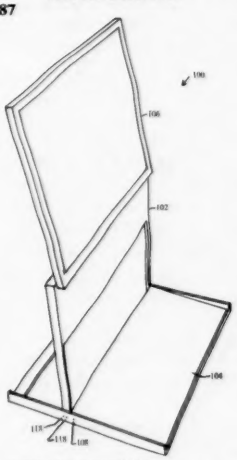
STANDUP NOTEBOOK COMPUTER

Christopher Eisbach; Eric Andrew Knopf, both of Mountain View; Derek Solomon Pai, Redwood City, all of Calif.; Ramiro Ramirez, Apex, N.C.; Edwin Joseph Selker, Cambridge, Mass., and Todd C. Wyant, Morgan City, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1999, Appl. No. 473,320

Int. Cl. G06F *1/20*

U.S. Cl. 361—687 **19 Claims**



1. A notebook computer comprising:

a main body oriented substantially vertically for improved heat dissipation;

a keyboard; and

a display pivotably attached to an upper portion of said main body and supported in a substantially vertical orientation by said main body for improved ergonomic positioning.

US 6,341,062 B1

THERMAL TRANSFER HINGE FOR HINGED MOBILE COMPUTING DEVICE AND METHOD OF HEAT TRANSFER

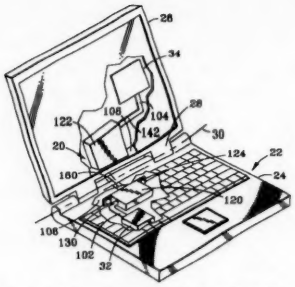
Janak G. Patel, South Burlington, Vt., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 6, 2000, Appl. No. 519,558

Int. Cl. G06F *1/20*

U.S. Cl. 361—687 **22 Claims**

1. A thermal transfer hinge for transferring heat in a mobile computing device having a base, a display unit and a hinge assembly attached to the base and display unit for permitting the



display unit to move between open and closed positions relative to the base, the hinge assembly having a rotational axis, the thermal transfer hinge comprising:

a. a first heat pipe;

b. a second heat pipe;

c. a first block having a thermal conductivity at least as high as copper, said first block connected to said first heat pipe;

d. a second block having a thermal conductivity at least as high as copper, said second block connected to said second heat pipe; and

e. at least one braided metal wire attached to said first block and said second block so as to be in thermal contact with said first block and said second block, said at least one braided metal wire having a thermal conductivity at least as high as copper.

US 6,341,063 B2

INSTALLATION STRUCTURE OF PRINTED-CIRCUIT BOARD FOR ELECTRONIC CONTROL UNIT

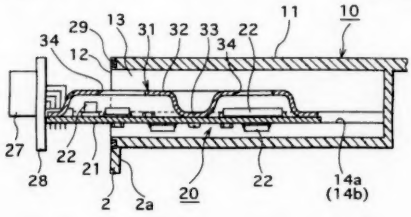
Kenji Kinoshita, Kariya; Hideki Ishihara; Akira Kurimoto, both of Anjo; Haruki Matsuzaki, Kariya; Ryoichi Yamamoto, Handa; Akihiro Yoshida, Aki-gun; Ryouta Nakamura, Kariya; Toshiki Kobayashi, Okazaki, and Hajime Katsuro, Nagoya, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Jan. 29, 2001, Appl. No. 770,404

Claims priority, application Japan, Feb. 2, 2000, 12-024624; Feb. 8, 2000, 12-029909; Feb. 8, 2000, 12-029910; Dec. 21, 2000, 12-388900

Int. Cl. H05K *7/20*

U.S. Cl. 361—690 **24 Claims**



1. An electronic control unit, comprising:

a printed-circuit board on which a plurality of electronic devices are mounted;

a metal plate including a convex for containing said electronic devices; and

a casing for containing said printed-circuit board, wherein said printed-circuit board is fixed to said metal plate at a peripheral end and approximate center portions thereof.

US 6,341,064 B1

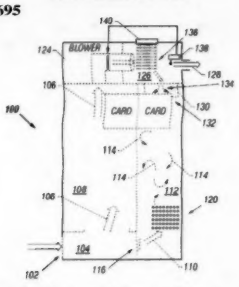
METHOD AND APPARATUS FOR THERMAL MANAGEMENT IN A TELECOMMUNICATIONS EQUIPMENT CABINET

Eddie R. Bradley, Richardson, Tex., assignor to Alcatel USA Sourcing, L.P., Plano, Tex.

Filed Mar. 31, 2000, Appl. No. 541,410

Int. Cl. H05K *7/20*

U.S. Cl. 361—695 **18 Claims**



2. A telecommunications equipment cabinet, comprising:

a first equipment portion;

a second equipment portion;

an inlet port disposed in said first equipment portion, said inlet port operating to admit cooling air into said first equipment portion;

a blower coupled to said first equipment portion for drawing a first portion of said cooling air across at least one component disposed in said first equipment portion, whereby said first portion of said cooling air is transformed into a warmed air mass;

an outlet port disposed in said second equipment portion, said outlet port operating to discharge at least a first portion of said warmed air mass via an exhaust path;

a plurality of louvers disposed between said first equipment potion and said second equipment portion, said plurality of louvers operating to admit a second portion of said cooling air into said second equipment portion; and

means associated with said exhaust path to provide an air conducting path for conducting a second portion of said warmed air mass from said exhaust oath into said second equipment portion, wherein said second portion of said warmed air mass is intermixed with said second portion of said cooling air for removing heat from at least one component disposed in said second equipment portion.

US 6,341,065 B1

HEAT SINK CLIP

Wei-Ta Lo, Miou-Li, Taiwan, assignor to Foxconn Precision Components Co., Ltd., Taipei Hsien, Taiwan

Filed Oct. 4, 2000, Appl. No. 679,594

Claims priority, application Taiwan, Jun. 9, 2000, 089209809

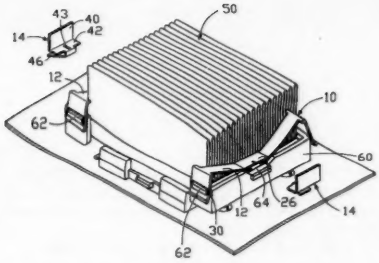
Int. Cl. H05K *7/20*

U.S. Cl. 361—704 **7 Claims**

1. A heat sink clip comprising:

a body comprising a spring portion and two legs extending downwardly from two opposite ends of the spring portion and adapted to engage with a retention module, a spring tongue extending downwardly from the spring portion; and

a fastener being inserted between the spring portion and a heat sink and releasably engaging with the spring portion, the fastener having an operation portion and a connecting portion forming a slot engaging with the spring tongue thereby preventing the fastener from breaking away from the spring portion of the body, a spring tab being integrally formed with and located under the connecting portion and accommodated



between the spring portion and the heat sink for elastically pressing the heat sink toward the retention module.

US 6,341,066 B1

ELECTRONIC CONTROL UNIT HAVING DRIVE ELEMENT AND CONTROL PROCESSING ELEMENT

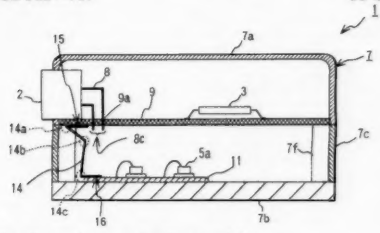
Toru Murowaki, Chiryu; Toshiaki Yagura, Nakata-gun; Yoshitaka Nakano, Chiryu, and Taku Iida, Kariya, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Sep. 29, 2000, Appl. No. 672,498

Claims priority, application Japan, Sep. 30, 1999, 11-279301; Oct. 5, 1999, 11-284218; Oct. 8, 1999, 11-288398

***Int. Cl. H05K** 7/20*

U.S. Cl. 361—707 **30 Claims**



1. An electronic control unit comprising:

a box having an inner wall part serving as a radiation plate;

a drive circuit board disposed in close adhesion with the radiation plate in the box;

a control circuit board disposed in the box and facing the drive circuit board;

a connecting wire connecting the drive circuit board and the control circuit board;

a connector disposed on the control circuit board;

a drive element disposed on the drive circuit board for supplying power to an outside control object through the connector; and

a control processing element disposed on the control circuit board for performing a control processing based on a signal inputted from an outside of the box through the connector and outputting a control signal in accordance with a result of the control processing to the drive element to control the outside control object, wherein the connecting wire is connected to the control circuit board at a bonding portion in a vicinity of the connector; and

wherein the connector integrally has a first connector pin and a second connector pin, the first connector pin being electrically connected to the drive element for transmitting the power from the drive element to the outside control object, the second connector pin being electrically connected to the control processing element for transmitting the signal from the outside of the box to the control processing element.

US 6,341,067 B1

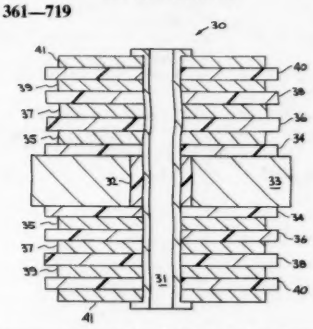
PRINTED CIRCUIT BOARD FOR A CCD CAMERA HEAD

Alan D. Conder, Tracy, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Division of application No. 08/683,644, filed on Jul. 15, 1996, now Pat. No. 6,078,359. This application Apr. 5, 2000, Appl. No. 543,282.

***Int. Cl. H05K** 7/20*

U.S. Cl. 361—719 **12 Claims**



1. An improved printed circuit board having electronic components thereon, comprising:

a multilayer construction with at least two insulative layers on each side of an internal heat sink such that said heat sink is located intermediate said multilayer constructions;

said internal heat sink comprising an internal integral heat conductive core within said printed circuit board and having at least one section extending outwardly from said printed circuit board for connection to a heat conducting means, additionally including means forming a plated-thru hole extending through said multilayer construction and through said heat sink.

US 6,341,068 B1

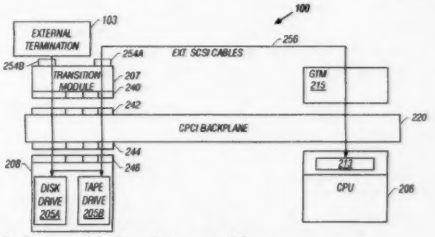
LOW PROFILE CONNECTOR SYSTEM FOR PROVIDING MULTIPLE DRIVES ON A CARD

Ed Bradley, Richardson; Melvin G. Peel, Jr., Plano; Hadi M. Hayek, Euless, and Ignacio Linares, Plano, all of Tex., assignors to Alcatel USA Sourcing, L.P., Plano, Tex.

Filed Mar. 31, 2000, Appl. No. 541,471

***Int. Cl. H05K** 1/14*

U.S. Cl. 361—736 **20 Claims**



1. A storage card module, comprising:

a printed circuit board (PCB) provided as a front panel card, said PCB supporting traces from a card connector that is matched to at least one backplane connector disposed on a backplane, wherein said at least one backplane connector is coupled to an input/output (I/O) bus interface;

a first storage device positioned on said PCB with a first predetermined spacing disposed therebetween;

a second storage device positioned on said PCB with a second predetermined spacing disposed therebetween;

at least one low profile connector disposed in each of said first and second predetermined spacings, said at least one low

profile connector coupling to at least a portion of said traces from said card connector; and

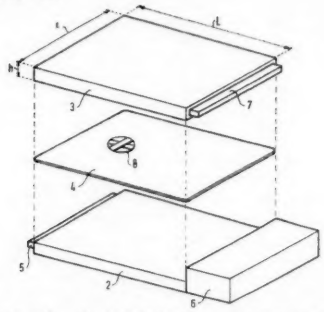
a flexible ribbon cable disposed between said at least one low profile connector and a corresponding storage device for providing an electrical path therebetween.

US 6,341,069 B1

RADIO MODEM FITTED WITH A MEMORY CARD READER

Thierry Torlotin, Boulogne, France, assignor to Alcatel, Paris, France

Filed Nov. 3, 1997, Appl. No. 962,615
Claims priority, application France, Nov. 4, 1996, 96 13397
Int. Cl. H05K *1/14*
U.S. Cl. 361—737 **6 Claims**



1. A radio modem for installation in an equipment, said modem being adapted for insertion within a slot for an equipment card of a predetermined thickness provided in said equipment, said modem comprising:

two elements containing circuits which are disposed on top of one another with a space therebetween and which are fitted within said slot so as to form a memory card reader,

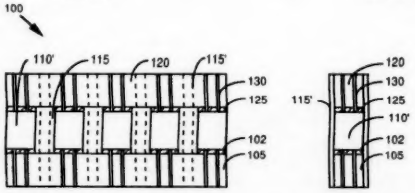
wherein each of said two elements is an equipment card of a predetermined thickness which is less than said predetermined thickness of said slot of said equipment.

US 6,341,070 B1

WAFER-SCALE PACKING PROCESSES FOR MANUFACTURING INTEGRATED CIRCUIT (IC) PACKAGES

Ho-Yuan Yu, 19308 Vendura Ct., Saratoga, Calif. 95070

Provisional application No. 60/094,398, filed on Jul. 28, 1998.
This application Jul. 28, 1999, Appl. No. 363,071.
Int. Cl. H05K *3/40*
U.S. Cl. 361—760 **20 Claims**



1. A wafer-level package supported on a first PCB carrier board comprising:

a processed wafer mounted on said first PCB carrier board wherein said processed wafer comprising a plurality of integrated circuit (IC) chips;

each of said plurality of integrated circuit (IC) chips being separated by scribe-line gaps from neighboring IC chips wherein each of these scribe-line gaps is filled with flexible gap-filling insulation material; and

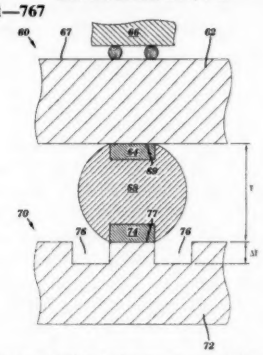
a second PCB carried board composed of same material as said first PCB carrier board mounted on top of said processed wafer.

US 6,341,071 B1

STRESS RELIEVED BALL GRID ARRAY PACKAGE

Eric A. Johnson, Greene, and John S. Kresge, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1999, Appl. No. 272,517
Int. Cl. H05K *1/11;7/06*
U.S. Cl. 361—767 **21 Claims**



13. At least one electrical structure, comprising:

a substrate including a dielectric layer having a first surface;

at least one electrically conductive pad attached to the first surface; and

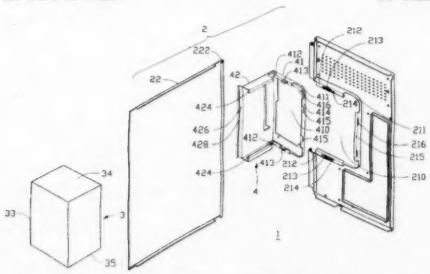
a void portion of the dielectric layer, wherein the void portion substantially surrounds a second portion of the dielectric layer, and wherein the pad is positioned on the second portion.

US 6,341,072 B1

ELECTRONIC EQUIPMENT ENCLOSURE

Nien-Chiang Liao, Lu-Chou, Taiwan, assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Jan. 3, 2000, Appl. No. 476,899
Claims priority, application Taiwan, May 15, 1999, 88207777
Int. Cl. H05K *7/14*
U.S. Cl. 361—825 **16 Claims**



1. An electronic equipment enclosure adapted to receive an electric component, comprising:

a main frame having a back wall and a side wall, the back wall having a portion cut away to form a match opening; and

a bracket being slidably attached to the match opening of the back wall and retaining the electric component therein, wherein the bracket has at least one hook extending there-

from, and a rim of the match opening of the back wall has at least one slot for slidably receiving the at least one hook and further defines a narrower portion to latch the at least one hook;

the side wall being detachably engaged with the back wall and abutting against the bracket to prevent the bracket from sliding out of the match opening;

wherein when the side wall is detached from the back wall, the bracket may slide out of the match opening.

US 6,341,073 B1

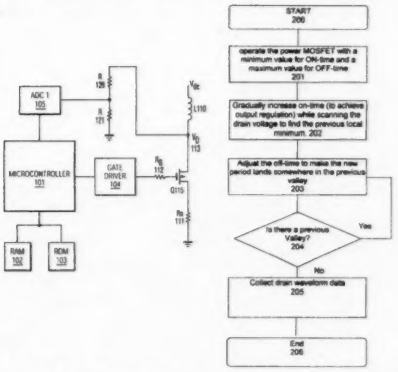
MULTIPLE VALLEY CONTROLLER FOR SWITCHING CIRCUIT

Nai-Chi Lee, Cortlandt Manor, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Nov. 16, 2000, Appl. No. 713,972

Int. Cl. H02M *3/335;* **G05F** *1/613;1/656*

U.S. Cl. 363—21.02 **18 Claims**



1. A method of controlling a switched mode resonant power system comprising:

sampling a waveform of a continuous switch parameter to form a digitized waveform;

analyzing the waveform to detect a series of parameter local minima;

selecting one of said series of parameter local minima from the digitized waveform; and

closing the switch at one of said parameter local minima.

US 6,341,074 B2

POWER CIRCUIT WITH SMOOTHING CHOKE COIL INDUCTANCE VARYING CIRCUIT

Manabu Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 21, 2000, Appl. No. 740,976

Claims priority, application Japan, Dec. 27, 1999, 11-371495

Int. Cl. H02M *3/335*

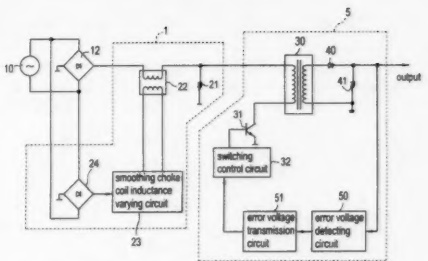
U.S. Cl. 363—21.04 **4 Claims**

1. A power circuit for receiving an alternating voltage and outputting a desired current-direct voltage, comprising:

a diode bridge for performing full-wave rectification of said alternating voltage;

a smoothing choke coil having a primary winding and a secondary winding for smoothing an output voltage from said diode bridge by said primary winding;

a smoothing circuit including a smoothing choke coil inductance varying circuit for flowing a current through said secondary winding of said smoothing choke coil to provide induction based on said output voltage from said diode bridge such that



an inductance value of said primary winding of said smoothing choke coil is at the maximum when said output voltage from said diode bridge is zero volt, is reduced with an increase in said output voltage, reaches a predetermined value when said output voltage is at the maximum, and is increased with a reduction in said output voltage; and

a DC—DC converter for obtaining a desired direct-current voltage from a direct-current voltage output from said smoothing circuit.

US 6,341,075 B2

HIGH VOLTAGE STABILIZING CIRCUIT

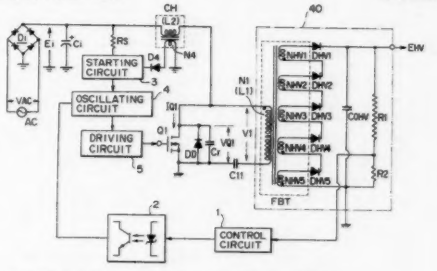
Masayuki Yasumura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 1, 2001, Appl. No. 773,801

Claims priority, application Japan, Feb. 3, 2000, 2000-032664

Int. Cl. H02M *3/335*

U.S. Cl. 363—21.2 **3 Claims**



1. A high voltage stabilizing circuit comprising:

rectifying and smoothing means for rectifying and smoothing commercial alternating-current power and thereby providing direct-current input voltage;

switching means having a switching device for interrupting said direct-current input voltage for output;

a parallel resonant circuit on a primary side formed so as to convert operation of said switching means into voltage resonance type operation;

a high voltage output transformer having a primary-side winding to which switching output of said switching means is transmitted and a secondary-side winding closely coupled to the primary winding for inducing a required high level of stepped-up alternating voltage;

high direct-current voltage generating means supplied with said stepped-up alternating voltage for generating and outputting a required high level of direct-current voltage; and

constant voltage control means for controlling said high direct-current voltage to a constant voltage by changing switching frequency of said switching device according to level of said high direct-current voltage.

US 6,341,076 B1

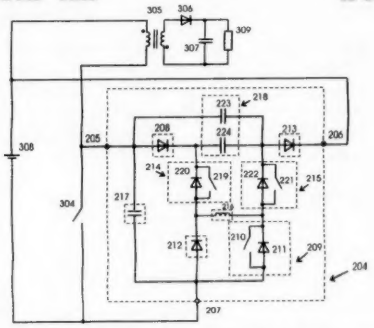
LOSS REDUCTION CIRCUIT FOR SWITCHING POWER CONVERTERS

Anatoly F. Kadatskyy; Yevgen V. Karpov; Vyacheslav Y. Soynikov, and Naum I. Volovets, all of South San Francisco, Calif., assignors to Next Power Corporation, South San Francisco, Calif.

Continuation-in-part of application No. 09/578,180, filed on May 23, 2000. This application Sep. 30, 2000, Appl. No. 677,717.

Int. Cl. H02H 7/122

U.S. Cl. 363—56.12 12 Claims



1. A family of switching type pulse-width-modulated DC-DC converters for converting the power from the primary power source to an output power draw defined by the load power consumption demands, said converters comprising:

an input means to be connected to said primary power source;

an output means to be connected to said load;

a common return bus to be connected between said primary power source and said load;

a power storage inductor to accumulate the power absorbed from said primary power source and to deliver said power to said load;

a controllable power switch operated in a pulse-width-modulated fashion and alternatively turned into conducting state to provide the power absorption from said primary power source into said power storage inductor and turned into non-conducting state to provide the power release from said power storage inductor into said load;

a power rectifier to disconnect said load from said power storage inductor and from said primary power source while said controllable power switch is conducting and to provide the power release path from said power storage inductor and from said primary power source to said load while said controllable power switch is non-conducting;

an output smoothing filter to store the power delivered to said load and to absorb the ripple component of delivered power;

an active soft-switching conditioner connected through its nodes across said controllable power switch to provide active shaping the operating points trajectories of the switching devices through active developing soft-switching zero-voltage-across/zero-current-through conditions within the time intervals of alternative changing between conducting and non-conducting states; said active soft-switching conditioner comprising:

an input node connected to the junction point common for said power storage inductor, for said power controllable switch and for said power rectifier;

an output node;

a common node connected to said common return bus;

a separator to separate the networks within said active soft-switching conditioner, said separator comprising at least a rectifier;

first commutator to provide first controllable path for currents within the network of said active soft-switching conditioner, said first commutator comprising a controllable switch connected in parallel with a rectifier;

second commutator to provide second controllable path for currents within the network of said active soft-switching conditioner, said second commutator comprising at least a rectifier;

third commutator to provide third controllable path for currents within the network of said active soft-switching conditioner, said third commutator comprising a rectifier;

fourth commutator to provide fourth controllable path for currents within the network of said active soft-switching conditioner, said fourth commutator comprising at least a rectifier;

first slope-shaper to provide shaping the voltage wave form developed across said controllable power switch during said controllable power switch transition into non-conducting state, therefore creating soft-switching zero-voltage-across condition for said controllable power switch during its transition into non-conducting state such that said controllable power switch transition into non-conducting state does not produce power loss, said first slope-shaper comprising at least a capacitor;

second slope-shaper to provide shaping the voltage wave form developed across said first commutator, therefore creating soft-switching zero-voltage-across/zero-current-through conditions during said first commutator transition into non-conducting state such that said first commutator transition into nonconducting state does not produce power loss, said second slope-shaper comprising at least one capacitor;

damp/resonant choke to provide the prescribed rate-of-change for the current through said power rectifier during its transition into non-conducting state, therefore creating soft-switching close to zero-current-through condition for said power rectifier during its transition into non-conducting state such that said power rectifier transition into non-conducting state does not produce power loss, and to provide the resonant discharge path for the capacitor within said first slope-shaper for shaping the voltage wave form developed across said controllable power switch during said controllable power switch transition into conducting state, therefore creating soft-switching zero-voltage-across/zero-current-through condition for said controllable power switch during its transition into conducting state such that said controllable power switch transition into conducting state does not produce power loss;

damp switch to provide a current path to release the energy magnetically stored within said damp/resonant choke, and to damp the parasitic circulation of energy magnetically stored within said damp/resonant choke, said damp switch comprising at least a rectifier; said first slope-shaper is connected between said input node and said common node to shunt said controllable power switch;

a series-connection network comprising said separator connected with said damp/resonant choke connected with said first commutator is parallel-connected across said first slope-shaper to shunt said controllable power switch;

a controllable switch within said first commutator is turned into conducting state prior to said controllable power switch transition into conducting state to provide the prescribed rate-of-change for the current through said power rectifier during its transition into non-conducting state, therefore creating soft-switching close to zero-current-through condition for said power rectifier during its transition into nonconducting state such that said power rectifier transition into non-conducting state does not produce power loss, and to provide the resonant discharge path for the capacitor within said first slope-shaper, therefore creating soft-switching zero-voltage-across/zero-current-through condition for said controllable power switch during its transition into conducting state such that said controllable power switch transition into conducting state does not produce power loss;

a series-connection network comprising said second slope-shaper connected with said damp switch is parallel-connected across said damp/resonant choke to shunt said damp/resonant choke and to provide the prescribed shape-of-change for the voltage across said first commutator

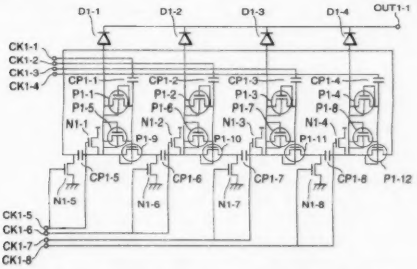
during its transition into nonconducting state, therefore creating soft-switching zero-voltage-across/zero-current-through condition for said first commutator such that said first commutator transition into non-conducting state does not produce power loss;

a series-connection network comprising said third commutator connected with said second slope-shaper is adapted to limit the voltage level across said second slope-shaper during resonant release of energy magnetically stored within said damp/resonant choke;

a series-connection network comprising said third commutator connected with said second slope-shaper is adapted to provide a discharge path for the capacitor(s) within said second slope-shaper past said controllable power switch transition into nonconducting state; and

a series-connection network comprising said third commutator connected with said second slope-shaper is coupled between said input node and said output node to provide the prescribed rate-of-change for the voltage across said controllable power switch during its transition into nonconducting state, therefore creating soft-switching zero-voltage-across condition for said controllable power witch such that said controllable power switch transition into non-conducting state does not produce power loss.

US 6,341,077 B1
BOOSTING CIRCUIT
Toshiya Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 31, 2000, Appl. No. 699,505
Claims priority, application Japan, Nov. 15, 1999, 11-323581
Int. Cl. H02M *3/18*
U.S. Cl. 363—60 **15 Claims**



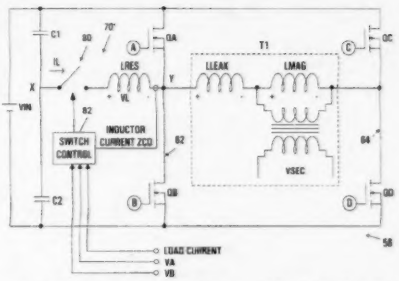
1. A boosting circuit comprising at least three capacitive elements, a first switching element for series-connecting said at least three capacitive elements, and second and third switching elements for respectively supplying different power supply potentials to one terminal and the other terminal of each capacitive element.

US 6,341,078 B1
FULL BRIDGE POWER CONVERTER WITH ENHANCED RESONANT SWITCHING
Michael Lee Miller, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 6, 2000, Appl. No. 543,994
Int. Cl. H02M *3/24*
U.S. Cl. 363—98 **21 Claims**

12. A full bridge power converter circuit arrangement, comprising:

(a) first and second inputs;

(b) first, second, third and fourth MOSFET's coupled in a full bridge topology, the full bridge topology including first and second legs coupled in parallel with one another between the first and second input terminals, the first leg including the first and second MOSFET's coupled in series between the first and second input terminals, and the second leg including the third and fourth MOSFET's coupled in series between the first and second input terminals, the first and second MOSFET's coupled to one another at a first bridge output and the third and fourth MOSFET's coupled to one another at a second bridge output;



(c) a transformer including a primary winding and a secondary winding, the primary winding coupled between the first and second bridge outputs;

(d) first and second capacitors coupled in series between the first and second input terminals, the first and second capacitors coupled to one another at a common node;

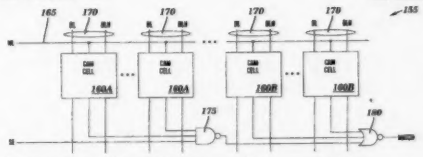
(e) a control circuit configured to drive gate inputs of the first, second, third and fourth MOSFET's with phase shifted resonant pulse width modulated control signals;

(f) an inductor coupled between the first bridge output and the common node defined between the first and second capacitors to facilitate resonant transitions in the first leg of the full bridge topology;

(g) a switch coupled in series with the inductor between the first bridge output and the common node defined between the first and second capacitors; and

(h) a load sensing circuit coupled to the switch and configured to control the current through the inductor as an inverse function of load.

US 6,341,079 B1
CONTENT ADDRESSABLE MEMORY DEVICE
Thomas B. Chadwick, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 23, 2001, Appl. No. 863,848
Int. Cl. G11C *15/00*
U.S. Cl. 365—49 **22 Claims**



1. A content addressable memory device, comprising:

a NAND-NOR chain comprised an alternating sequence of NAND and NOR stages;

said NAND stages, each including a first CAM cell comprising a first memory cell that stores a first data bit and a first compare cell that compares the first data bit with a first compare bit and generates a first compare signal indicating whether the first data bit matches the first compare bit and a logical NAND gate that combines the first compare signals of other first CAM cells in said NAND stage;

said NOR stages, each including a second CAM cell comprising a second memory cell that stores a second data bit and a second compare cell that compares the second data bit with a second compare bit and generates a second compare signal indicating whether the second data bit matches the second

compare bit and a logical NOR gate that combines the second compare signals of other second CAM cells in said NOR stage; and

said NAND-NOR chain generating a match signal indicating a match of all the compare bits to all the data bits in said content addressable memory device.

US 6,341,080 B1

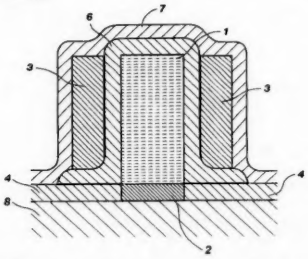
HALL EFFECT FERROMAGNETIC RANDOM ACCESS MEMORY DEVICE AND ITS METHOD OF MANUFACTURE

Richard Lienau, and Laurence Sadwick, both of Salt Lake City, Utah, assignors to Pageant Technologies, Inc., Toronto, Canada

Division of application No. 09/218,344, filed on Dec. 22, 1998, now Pat. No. 6,140,139. This application Jun. 15, 2000, Appl. No. 594,470.

Int. Cl. G11C *13/00*

U.S. Cl. 365—66 **24 Claims**



1. A Hall effect ferromagnetic non-volatile random access memory device comprising:

a) a substantially planar substrate;

b) a separate magnetically polarizable elongate domain carried by said substrate and having a height to width aspect ratio of greater than 1:1;

c) a word write line positioned on said substrate;

d) a bit write line positioned on said substrate;

e) a conductive coil positioned on said substrate, the coil member substantially surrounding and being coupled to the domain and having a central axis representing a center of a loop, said central axis being oriented substantially parallel to a long axis of the domain, the coil uniquely connected between the word write line and the bit write line;

f) means connected to said word write line and said bit write line for driving a current through the coil of sufficient magnitude to switch the residual magnetic field direction of the domain; and

g) a magnetic field sensor disposed adjacent to an end of the domain opposite the substrate for passively sensing the direction of the residual magnetic field of the domain.

US 6,341,081 B2

CIRCUIT FOR DRIVING NONVOLATILE FERROELECTRIC MEMORY

Hee Bok Kang, Daejeon-si, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Seoul, Rep. of Korea

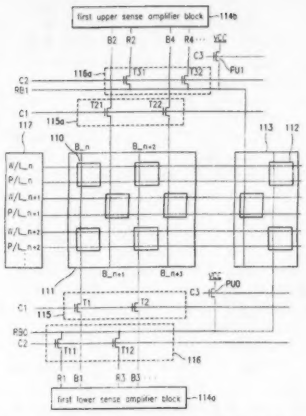
Division of application No. 09/240,887, filed on Feb. 1, 1999, now Pat. No. 6,188,599. This application Feb. 8, 2001, Appl. No. 778,948.

Claims priority, application Rep. of Korea, May 13, 1998, 98-17213

Int. Cl. G11C *11/22*

U.S. Cl. 365—145 **23 Claims**

1. A nonvolatile ferroelectric memory comprising: p1 a first main cell block having a plurality of bitlines, a plurality of wordlines and platelines formed in a direction crossing the bitlines, and



a main cell at a corresponding crossing point of the bitlines with the wordlines and the platelines;

a first reference cell block on one side of the first main cell block, the first reference cell block having first and second reference bitlines formed in a direction crossing the wordlines and the platelines and a reference cell on a corresponding crossing point of the first and second reference bitlines with the wordlines and the platelines;

a first lower sense amplifier block having a plurality of sense amplifiers, each sense amplifier with a bitline input/output node connected to an odd numbered bitline for sensing a data on the odd numbered bitline and a reference bitline input/output node connected to the first reference bitline for sensing a data on the first reference bitline;

a first upper sense amplifier block having a plurality of sense amplifiers, each sense amplifier with a bitline input/output node connected to an even numbered bitline for sensing a data on the even numbered bitline and a reference bitline input/output node connected to the second reference bitline for sensing a data on the second reference bitline;

a first switching unit for selective connection of the odd numbered bitlines to the bitline input/output nodes on the sense amplifiers in the first lower sense amplifier block;

a second switching unit for selective connection of the reference bitline to the reference bitline input/output node on each of the sense amplifiers in the first lower sense amplifier block;

a third switching unit for selective connection of the even numbered bitlines to the bitline input/output nodes on the sense amplifiers in the first upper sense amplifier block;

a fourth switching unit for selective connection of the reference bitline to the reference bitline input/output node on each of the sense amplifiers in the first upper sense amplifier block; and

first and second pull-up transistors for pulling-up levels of the first and second reference bitlines to a level of a power supply voltage, respectively.

US 6,341,082 B2

FERROELECTRIC MEMORY CAPABLE OF SUPPRESSING DETERIORATION OF DUMMY CELLS AND DRIVE METHOD THEREFOR

Yasunari Hosoi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 2, 2001, Appl. No. 796,605

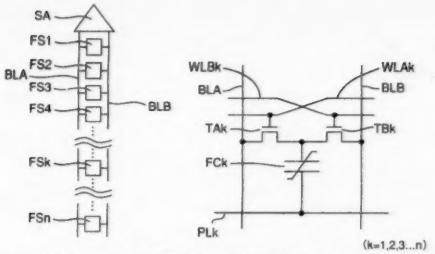
Claims priority, application Japan, Mar. 6, 2000, 12-059881

Int. Cl. G11C *11/22*

U.S. Cl. 365—145 **9 Claims**

1. A ferroelectric memory comprising:

a memory cell array having at least three or more memory cells each of which comprises a ferroelectric capacitor for storing a



logical "1" or a logical "0" depending on a direction of spontaneous polarization, and a first transistor and a second transistor connected in parallel to one electrode of the ferroelectric capacitor;

a first bit line to which the ferroelectric capacitors of the memory cells are connected in parallel via the first transistors;

a second bit line to which the ferroelectric capacitors of a plurality of memory cells are connected via the second transistors; and

a decision device for comparing a voltage of the first bit line and a voltage of the second bit line to each other to decide whether data is a logical "1" or a logical "0".

US 6,341,083 B1

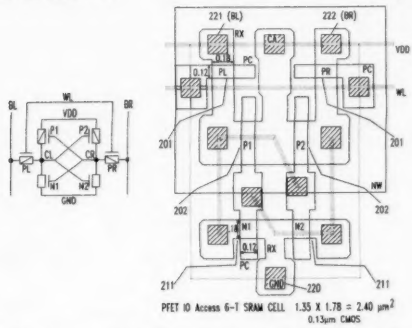
CMOS SRAM CELL WITH PFET PASSGATE DEVICES

Robert C. Wong, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 2000, Appl. No. 710,947

Int. Cl. G11C *11/00*

U.S. Cl. 365—154 **10 Claims**



1. A one port static random access memory (SRAM) cell comprising:

a first pair of P channel field effect transistors (PFET), each of the PFETs having a common source connected to a voltage potential and a gate connected to a drain of the other PFET;

a pair of N channel field effect transistors (NFET), each of the NFETs having a drain connected to the drain of the respective PFET of the first pair of PFETs, a common source connected to ground, and a gate connected to the drain of an opposite PFET of the first pair of PFETs;

a second pair of PFETs having the drain respectively connected to a connection linking the respective drain of the NFET of the pair of NFETs to the drain of the PFET of the first pair of PFETs, wherein the size of each of the PFETs is approximately the same as the size of each of the NFFTs;

complementary bit lines, each of the bit lines respectively connected to the source of the PFET of the second pair of PFETs; and

a word line connected to the gates of the PFETs of the second pair of PFETs.

US 6,341,084 B2

MAGNETIC RANDOM ACCESS MEMORY CIRCUIT

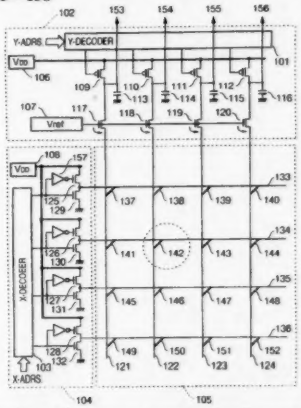
Hideaki Numata, and Kouichi Takeda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 15, 2001, Appl. No. 854,481

Claims priority, application Japan, May 15, 2000, 2000-142361

Int. Cl. G11C *11/00*

U.S. Cl. 365—158 **11 Claims**



1. A magnetic random access memory circuit comprising:

a memory cell array having a plurality of sense lines, a plurality of word lines intersecting said plurality of sense lines, a number of magneto-resistive elements located at intersections between said plurality of sense lines and said plurality of word lines, each of said magneto-resistive elements being connected between one sense line and one word line;

a plurality of capacitors of the number corresponding to the number of said plurality of sense lines, said plurality of capacitors being previously charged to a high voltage before a reading operation is carried out, each of said plurality of capacitors being connected to a corresponding sense line of said plurality of sense lines through a voltage drop means so that a voltage lower than said high voltage charged in said capacitors is applied to said plurality of sense lines; and

means for equalizing the potential of all said plurality of sense lines and all not-selected word lines of said plurality of word lines and for grounding a selected word line of said plurality of word lines so that an electric charge previously stored in said capacitor connected through said voltage drop means to a selected sense line is discharged through said voltage drop means, said selected sense line, a selected magneto-resistive element, and said selected word line, whereby information stored in said selected magneto-resistive element is read out by a potential on said capacitor.

US 6,341,085 B1

STORAGE DEVICE EMPLOYING A FLASH MEMORY

Hajime Yamagami; Kouichi Terada, both of Yokohama; Yoshihiro Hayashi, Narashino; Takashi Tsunehiro, Ebina; Kunihiro Katayama; Kenichi Kaki, both of Yokohama, and Takeshi Furuno, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

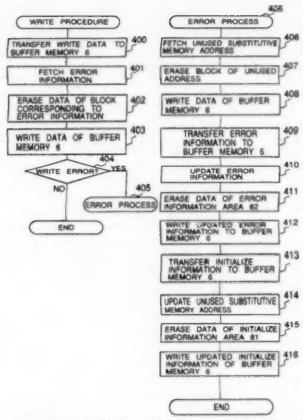
Continuation of application No. 08/782,344, filed on Jan. 13, 1997, now Pat. No. 6,130,837, which is a continuation of application No. 07/981,438, filed on Nov. 25, 1992, now Pat. No. 5,644,539. This application Sep. 12, 2000, Appl. No. 660,648.

Claims priority, application Japan, Nov. 26, 1991, 3-310848; Nov. 28, 1991, 3-314297; Feb. 19, 1992, 4-031756; Apr. 20, 1992, 4-099891

Int. Cl. G11C *7/00*

U.S. Cl. 365—185.09 **13 Claims**

1. A storage device employing a flash memory, comprising:



a memory controller which reads data out of and writes data into said flash memory;

said flash memory including a data memory area which stores the data therein, a substitutive memory area which substitutes for locations of errors in said data memory area, an error memory area which stores error information of said data memory area therein, and an initialize information area which stores start addresses and storage capacities of the respective memory areas therein.

US 6,341,086 B2

SEMICONDUCTOR MEMORY CIRCUIT INCLUDING A DATA OUTPUT CIRCUIT

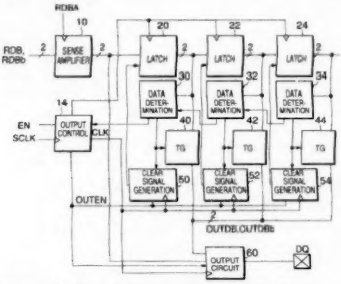
Hidekazu Noguchi, Saitama, Japan, assignor to Oki Electric Industry Co., Ltd., Minato-ku, Japan

Filed Jan. 26, 2001, Appl. No. 769,425

Claims priority, application Japan, Apr. 19, 2000, 12-117987

Int. Cl. G11C *7/00*

U.S. Cl. 365—189.05 **14 Claims**



1. A semiconductor memory circuit comprising:

a sense amplifier amplifying data read out from a memory cell;

a first data storing circuit for temporally storing and outputting the data from said sense amplifier in response to a latch signal, said first data storing circuit erasing the stored data in response to a first clear signal;

a first determination circuit coupled to said first data storing circuit for determining whether said first data storing circuit stores the data, said first determination circuit outputting a first determination signal representing the determination;

an output data bus;

a first transfer circuit coupled to said first data storing circuit, said first determination circuit and said output data bus, said first transfer circuit transferring the data output from said first data storing circuit to said output data bus in response to the first determination signal;

a first clear signal generation circuit coupled to said first determination circuit and said first data storing circuit for generating the first clear signal in response to the first determination signal;

a second data storing circuit for temporally storing and outputting the data output from said first data storing circuit in response to the latch signal, said second data storing circuit erasing the stored data in response to a second clear signal;

a second determination circuit coupled to said second data storing circuit for determining whether said second data storing circuit stores the data, said second determination circuit outputting a second determination signal representing the determination;

a second transfer circuit coupled to said second data storing circuit, said second determination circuit and said output data bus, said second transfer circuit transferring the data output from said second data storing circuit to said data bus in response to the second determination signal; and

a second clear signal generation circuit coupled to said second determination circuit and said second data storing circuit for generating the second clear signal in response to the second determination signal.

US 6,341,087 B1

SEMICONDUCTOR DEVICE

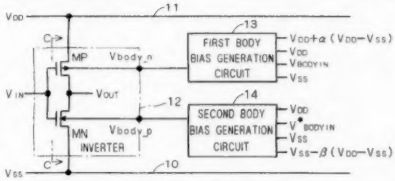
Tatsuya Kunikiyo, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 2000, Appl. No. 668,360

Claims priority, application Japan, Mar. 28, 2000, 12-088772

Int. Cl. G11C *7/00*

U.S. Cl. 365—189.09 **17 Claims**



1. A semiconductor device, comprising:

at least one MOS transistor formed in a main surface of a semiconductor substrate, being a constituent element of a circuit operating in synchronization with a system clock; and

a body bias generation circuit configured to apply a body potential to a body region of said at least one MOS transistor at a different level including a potential of reverse bias relative to a source region in response to a signal of said circuit operating in synchronization with said system clock.

US 6,341,088 B2

DYNAMIC RANDOM ACCESS MEMORY IN SWITCH MOSFETS BETWEEN SENSE AMPLIFIERS AND BIT LINES

Tatsuya Sakamoto, Higashimurayama; Osamu Nagashima, Hamura, and Riichiro Takemura, Kokobunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 09/471,504, filed on Dec. 23, 1999, now Pat. No. 6,212,110. This application Dec. 29, 2000, Appl. No. 750,038.

Claims priority, application Japan, Dec. 24, 1998, 10-365887

This patent is subject to a terminal disclaimer.

Int. Cl. G11C *7/00*

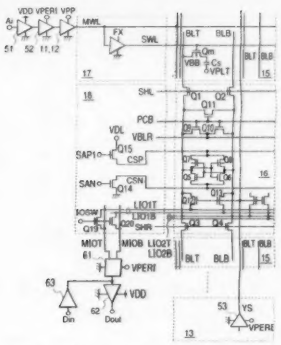
U.S. Cl. 365—190 **5 Claims**

1. A semiconductor memory comprising:

a plurality of word lines;

a pair of complementary bit lines;

a plurality of memory cells connected to said plurality of word lines, respectively;



a sense amplifier which amplifies a pair of signals appearing on said pair of complementary bit lines; and

a pair of N-channel MOSFETs interposed between a pair of sense nodes of said sense amplifier and said pair of complementary bit lines, which MOSFETs receive a control signal at their gates,

wherein said control signal is selectively set to one of a high level, a low level and an intermediate level between said high level and said low level,

wherein, after said pair of signals have appeared on said pair of complementary bit lines by selecting one of said plurality of word lines, said control signal is changed from said high level to said intermediate level, and

wherein, after the start of the operation of said sense amplifier, said control signal is returned from said intermediate level to said high level.

US 6,341,089 B1

SEMICONDUCTOR MEMORY DEVICE ALLOWING EFFECTIVE DETECTION OF LEAK FAILURE

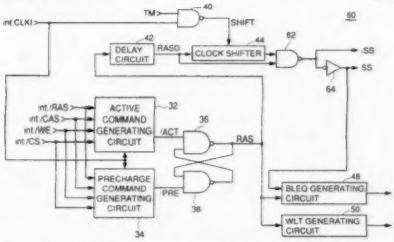
Seiji Sawada; Kiyohiro Furutani, and Mikio Asakura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 2001, Appl. No. 753,452

Claims priority, application Japan, Jun. 29, 2000, 12-195971

Int. Cl. G11C *7/00*

U.S. Cl. 365—191 **8 Claims**



1. A semiconductor memory device receiving a command in synchronization with a clock signal, comprising:

a memory array including a plurality of memory cells arranged in a matrix form having a plurality of rows and a plurality of columns, a plurality of word lines corresponding to said plurality of rows, respectively, and a plurality of bit line pairs corresponding to said plurality of columns, respectively;

a plurality of equalize circuits applying predetermined potentials to said plurality of bit line pairs, respectively;

a plurality of sense amplifiers for amplifying potential differences occurring on said plurality of bit line pairs, respectively; and

a control circuit for controlling reading of data from said memory array, said control circuit including

a command recognizing portion recognizing said command in accordance with a combination of a plurality of externally applied control signals, and issuing a timing reference signal providing a reference of timing of deactivation of said plurality of equalize circuits, activation of one of said plurality of word lines selected in accordance with an address signal, and activation of said plurality of sense amplifiers,

a delay circuit receiving and delaying said timing reference signal, and

a signal delay control circuit delaying the output of said delay circuit until activation of a first internal signal, and transmitting the delayed output to said plurality of sense amplifiers.

US 6,341,090 B1

METHOD FOR REPAIRING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

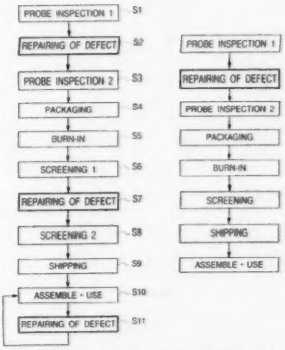
Mitsuru Hiraki, Kodaira, and Shoji Shukuri, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of application No. 09/435,035, filed on Nov. 5, 1999, now Pat. No. 6,201,733. This application Feb. 3, 2000, Appl. No. 497,119.

Claims priority, application Japan, Nov. 11, 1998, 10-320962

Int. Cl. G11C *7/00*

U.S. Cl. 365—200 **2 Claims**



1. A method for repairing a semiconductor integrated circuit device designed to operate in a first operation mode designated as a normal operation mode, comprising the steps of:

manufacturing a semiconductor integrated circuit device by forming, over a semiconductor substrate, a volatile memory, a volatile storage circuit, and a nonvolatile memory having nonvolatile memory cells;

performing a first inspection step of said semiconductor integrated circuit device to obtain first repair information regarding defects of said volatile memory;

programming the first repair information, in first ones of said nonvolatile memory cells in accordance with the inspection result of said first inspection step;

performing a burn-in test by making a power supply voltage of said semiconductor integrated circuit device higher than that for said normal operation mode of said semiconductor integrated circuit device;

performing a second inspection step of said semiconductor integrated circuit device after said burn-in test to obtain second repair information regarding the defects of said volatile memory, as caused by said burn-in test;

programming the second repair information, in second ones of said nonvolatile memory cells in accordance with the result of said second inspection step; and

operating said semiconductor integrated circuit device by supplying a power supply voltage for said normal operation mode,

wherein said operating step includes:

reading said first and said second repair information from said nonvolatile memory so as to store said first and said second repair information in said volatile storage circuit, and

comparing said first and said second repair information with an access address for accessing said volatile memory so as to obtain data from said volatile memory.

US 6,341,091 B1

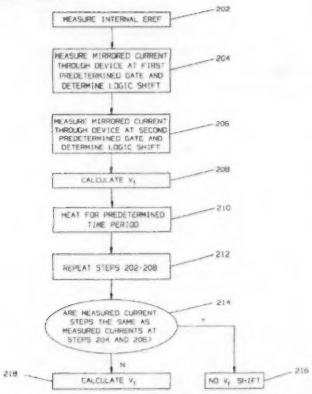
METHOD AND SYSTEM FOR TESTING A BIT CELL IN A MEMORY ARRAY

Mohammad Yunus, Fremont, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 6, 2000, Appl. No. 707,492

Int. Cl. G11C *7/00*

U.S. Cl. 365—201 **12 Claims**



1. A method for testing a cell in a device for reliability, the cell being coupled to a reference voltage and a current source; the method comprising the steps of:

(a) measuring an internal reference voltage;

(b) measuring a first mirrored current through the device at first predetermined gate voltage;

(c) measuring a second mirrored current through the device at a second predetermined voltage;

(d) determining the threshold voltage of the cell;

(e) heating the device for a predetermined period of time; and

(f) calculating a new threshold voltage if either the first or the second measured mirrored current is different from the first or the second measured mirrored current of steps (b) and (c).

US 6,341,092 B1

DESIGNING MEMORY FOR TESTABILITY TO SUPPORT SCAN CAPABILITY IN AN ASIC DESIGN

Ghasi R. Agrawal, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Dec. 11, 2000, Appl. No. 735,233

Int. Cl. G01R *31/28*

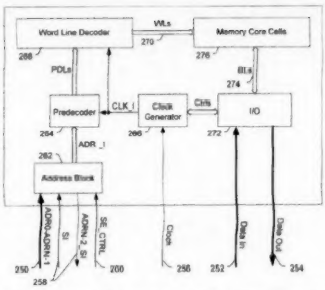
U.S. Cl. 365—201 **23 Claims**

1. A memory device, comprising:

an array of storage locations;

a scan input test vector; and

a plurality of series-connected scan cells, wherein an initial one of the plurality of scan cells is adapted to receive the scan test vector and each of the scan cells is adapted to receive a respective one of a plurality of input signals, such that the respective input signals are forwarded through only a portion of the corresponding said plurality of scan cells to a corresponding one of the storage locations and, during a test mode of operation, the scan test vector is forwarded through an entirety of each of the plurality of scan cells absent transfer thereof into said storage locations.



US 6,341,093 B1

SOI ARRAY SENSE AND WRITE MARGIN QUALIFICATION

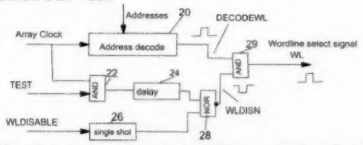
Martin Eckert, Jettingen; Guenter Mayer; Juergen Pille, both of Stuttgart, and Dieter Wendel, Schoenaich, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 2001, Appl. No. 872,885

Claims priority, application European Pat. Off., Jun. 7, 2000, 00112222

Int. Cl. G11C *29/00*

U.S. Cl. 365—201 **13 Claims**



7. An integrated circuit including a semiconductor memory, comprising:

a delay element receiving a clocked test signal to trigger shortening a duration of a wordline select signal relative to a normal wordline select signal; and

means for providing said wordline select signal to said semiconductor memory.

US 6,341,094 B1

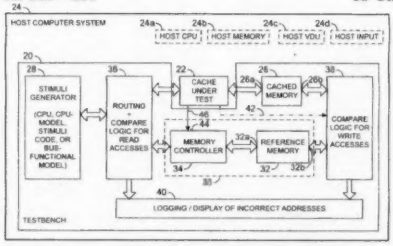
METHOD AND APPARATUS FOR FUNCTIONAL TESTING OF MEMORY RELATED CIRCUITS

Stefan Auracher, Baierbrunn, Germany, assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 30, 2001, Appl. No. 918,387

Int. Cl. G11C *29/00*

U.S. Cl. 365—201 **18 Claims**



1. An apparatus for testing a functional operation of a memory related circuit, said memory related circuit being represented by a

first circuit model defining a circuit under test, the apparatus comprising:

a storage device for storing said first circuit model representing said circuit under test, and for storing a second circuit model representing a testbench circuit for interfacing with said circuit under test;

a processor for processing said first and second circuit models to simulate a response of said circuit under test when simulated signals are applied thereto via said testbench circuit, said simulated signals simulating read and write accesses to said circuit under test;

wherein said second circuit model representing the testbench circuit includes:

a first memory for interfacing with a first port of said circuit under test; and

monitor circuitry for interfacing with at least one of said memory and a second port of said circuit under test, for monitoring the response of said circuit under test as said simulated signals are applied thereto.

US 6,341,095 B1

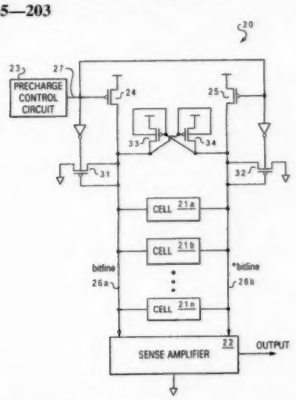
APPARATUS FOR INCREASING PULLDOWN RATE OF A BITLINE IN A MEMORY DEVICE DURING A READ OPERATION

Michael Ju Hyeok Lee, and Jose Angel Paredes, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 21, 2001, Appl. No. 788,819

Int. Cl. G11C *13/00*

U.S. Cl. 365—203 **20 Claims**



1. An memory device comprises:

a pair of complementary differential bitlines, wherein each of said complementary differential bitlines is connected to a precharge transistor;

a plurality of storage cells connected between said pair of complementary differential bitlines;

a first discharge transistor connected to a first one of said complementary differential bitlines for increasing pulldown rate of said first one of said complementary differential bitlines during a read operation by sending a voltage to a body of said first discharge transistor to lower a threshold voltage of said first discharge transistor; and

a second discharge transistor connected to a second one of said complementary differential bitlines for increasing pulldown rate of said second one of said complementary differential bitlines during said read operation by sending a voltage to a body of said second discharge transistor to lower a threshold voltage of said second discharge transistor.

US 6,341,096 B1

SEMICONDUCTOR MEMORY DEVICE

Katsumi Okina, Fuchu, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

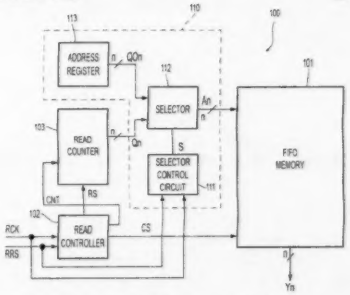
PCT No. PCT/JP99/03419, § 371 Date Jun. 15, 2000, § 102(e) Date Jun. 15, 2000, PCT Pub. No. WO99/67788, PCT Pub. Date Dec. 29, 1999

PCT Filed Jun. 25, 1999, Appl. No. 486,259

Claims priority, application Japan, Jun. 25, 1998, 10-179281

Int. Cl. G11C *7/00*

U.S. Cl. 365—220 **13 Claims**



1. A semiconductor memory device comprising:

a memory storing data read out from the memory in synchronization with a read clock signal;

a read controller which synchronizes with the read clock signal, generates a read counter clock signal and a memory read access signal, and generates a read counter reset signal which is activated in synchronization with the read clock signal after a reset signal becomes active;

a read counter which sequentially generates first read address signals with different address values in synchronization with the read clock signal and which is reset when the read counter reset signal is active; and

a read address setting circuit which outputs second read address signals to the memory, based on at least the first read address signals from the read counter and the reset signal, address values of the second read address signals from the read address setting circuit being set based on address values of the first read address signals when the reset signal is inactive, and being set at a specified address value regardless of a logic of the first read address signals when the reset signal is active.

US 6,341,097 B1

SELECTIVE ADDRESS SPACE REFRESH MODE

Louis L. Hsu, Fishkill, N.Y.; Richard Michael Parent, Shelburne, Vt., and Matthew Robert Wordeman, Makawao, Hi., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 17, 2001, Appl. No. 764,654

Int. Cl. G11C *7/00*

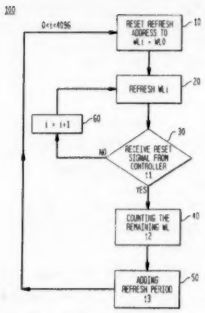
U.S. Cl. 365—222 **20 Claims**

1. A method of refreshing a DRAM having a multitude of successive wordlines, the method comprising:

starting a refresh cycle, the refresh cycle including the steps of

i) counting the wordlines one at a time in succession,

ii) refreshing the wordlines counted over a first period t1, and



iii) at the end of the period t1, stopping the refreshing of the wordlines, and continuing the counting of the wordlines for a period t2; and

after the period t2, restarting the refresh cycle.

US 6,341,098 B2

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING HIERARCHICAL POWER SOURCE ARRANGEMENT

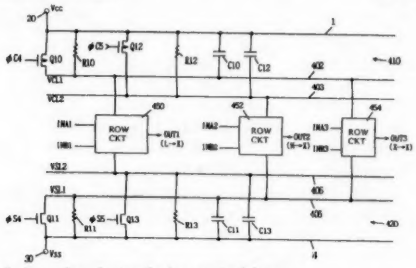
Tadato Yamagata; Kazutami Arimoto, and Masaki Tsukude, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of application No. 09/497,199, filed on Feb. 3, 2000, now Pat. No. 6,246,625, which is a division of application No. 09/317,860, filed on May 25, 1999, now Pat. No. 6,134,171, which is a division of application No. 08/953,728, filed on Oct. 17, 1997, now Pat. No. 5,959,927, which is a division of application No. 08/820,545, filed on May 19, 1997, now Pat. No. 5,726,946, which is a continuation of application No. 08/458,583, filed on Jun. 2, 1995, now abandoned. This application May 2, 2001, Appl. No. 846,223.

Claims priority, application Japan, Jun. 2, 1994, 6-121299; Dec. 22, 1994, 6-320102; Feb. 13, 1995, 7-023590

Int. Cl. G11C *7/00*

U.S. Cl. 365—226 **11 Claims**



1. A semiconductor device, comprising:

a plurality of memory cells arranged in a matrix;

a first power supply node to which a voltage of a first logic level is supplied;

a first power supply line;

first variable impedance means of which impedance is variable, connected between said first power supply node and said first power supply line for transmitting the voltage on said first power supply node to said first power supply line;

a second power supply node to which a voltage of a second logic level is supplied;

a second power supply line;

second variable impedance means of which impedance is variable, connected between said second power supply node and said second power supply line for transmitting the voltage on said second power supply node to said second power supply line;

row circuitry operating using the voltage on said first power supply line and the voltage on said second power supply line as operating power supply voltages, for performing an operation related to row selection of said plurality of memory cells;

sense amplifier means for detecting and amplifying memory information of a selected memory cell out of said plurality of memory cells;

means for generating an internal row address strobe signal in response to an externally applied external row address strobe signal;

first control means responsive to said internal row address strobe signal for setting said first and second variable impedance means to a low impedance state;

means responsive to said internal row address strobe signal for generating a sense amplifier activating signal for activating said sense amplifier means;

means for generating an interlock signal which is activated in response to said sense amplifier activating signal and inactivated in response to inactivation of said external row address strobe signal, for allowing column selecting operation of said plurality of memory cells when activated;

means for setting at least one of said first and second variable impedance means to a high impedance state before activation of said interlock signal and after establishment of an output from said row circuitry;

means responsive to inactivation of said interlock signal for setting both said first and second variable impedance means to a low impedance state; and

means responsive to inactivation of said internal row address strobe signal for setting another one which is different from said one set to the high impedance state by said means for setting, out of said first and second variable impedance means to a high impedance state;

one of said first and second variable impedance means which is set to the high impedance state being determined uniquely in advance in accordance with a logic level of a signal output from said row circuitry when said internal row address strobe signal is inactivated.

US 6,341,099 B1

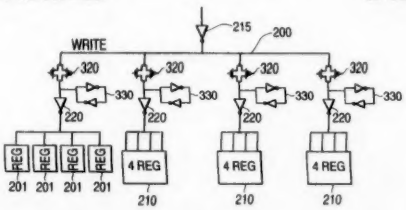
REDUCING POWER CONSUMPTION IN A DATA STORAGE DEVICE

Sudarshan Kumar, Freemont; Sadhana Madhyastha, Santa Clara; Gaurav G. Mehta, Folsom, and Jiann-Cherng James Lan, San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 29, 2000, Appl. No. 672,950

Int. Cl. G11C *7/00*

U.S. Cl. 365—227 **15 Claims**



1. A reduced power consumption data storage device comprising:

a plurality of data cells arranged in clusters, each cluster comprising more than one data cell having their data enable inputs connected together;

a write data bus to provide data enable signals to said data enable inputs of said plurality of data cells;

a plurality of pass gates respectively disposed between said clusters and said write data bus, said pass gates being selectively enabled to allow data enable signals to pass from said write data bus to said data enable inputs of said more than one data cell of a selected one or more of said clusters and

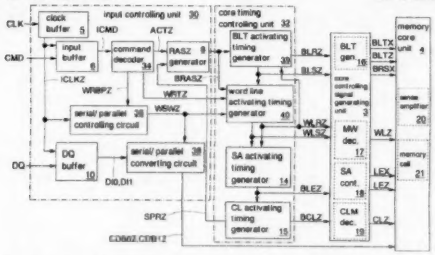
a plurality of sustainer circuits respectively connected to said plurality of pass gates.

US 6,341,100 B1

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING CIRCUIT FOR WRITING DATA TO MEMORY CELL

Shinya Fujioka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 22, 2000, Appl. No. 575,363
Claims priority, application Japan, Jul. 22, 1999, 11-208212
Int. Cl. G11C *8/00*
U.S. Cl. 365—233 **15 Claims**



1. A semiconductor integrated circuit comprising:

a memory core unit, including

a memory cell,

a bit line connected to said memory cell,

a resetting circuit for resetting said bit line to a predetermined voltage,

a sense amplifier for amplifying data transmitted to said bit line, and

a column switch for transmitting data to said bit line; and

a controlling signal generating unit for activating a bit line controlling signal for inactivating said resetting circuit, before said memory core unit receives write data, and for activating a word line signal for controlling the connection between said memory cell and said bit line, a sense amplifier activating signal for activating said sense amplifier, and a column line signal for activating said column switch, after said memory core unit receives write data.

US 6,341,101 B1

LAUNCHABLE COUNTERMEASURE DEVICE AND METHOD

C. Ray Dutton, New Bedford, Mass.; Lynn A. Potter, North Kingstown, R.I., and Joseph B. Lopes, Seekonk, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

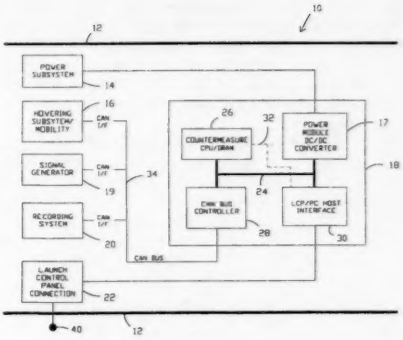
Filed Mar. 27, 2000, Appl. No. 536,490
Int. Cl. H04K *3/00*
U.S. Cl. 367—1 **20 Claims**

1. A method for effecting a plurality of countermeasure techniques using a launchable countermeasure device, comprising:

connecting an external computer to said launchable countermeasure device through an external connector outside of a hull of said launchable countermeasure device;

communicating with an internal countermeasure processor mounted within said hull of said launchable countermeasure device;

transferring from said external computer data related to said plurality of countermeasure techniques into a memory for use by said internal countermeasure processor;



disconnecting said external computer from said external connector;

connecting a launch control panel to said external connector;

selecting one or more of said plurality of countermeasure techniques using said launch control panel; and

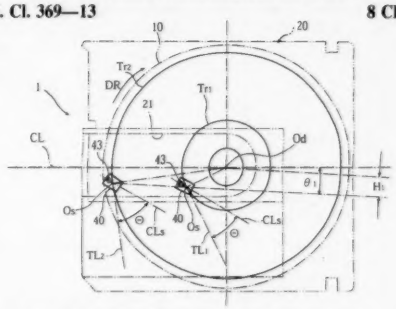
deploying said launchable countermeasure device to effect said selected one or more countermeasure techniques underwater.

US 6,341,102 B1

DATA WRITING/READING APPARATUS

Tadashi Sato; Haruhiko Izumi; Goro Kawasaki, and Satoshi Shimokawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 3, 1999, Appl. No. 433,328
Claims priority, application Japan, Nov. 9, 1998, 10-317531
Int. Cl. G11B *11/00;20/20;5/00;21/22;5/54*
U.S. Cl. 369—13 **8 Claims**



1. A data handling apparatus comprising:

a rotatable disk provided with at least an innermost track and an outermost track for storing data;

a disk cartridge for housing the disk, the disk cartridge being formed with an opening for exposure of a portion of the disk, said opening being elongated along a first center line extending radially of the disk;

a slider floatable relative to the disk, the slider being provided with a leading portion and a trailing portion; and

a driving mechanism for moving the slider within said opening relative to the disk along a predetermined straight path extending between the innermost track and the outermost track;

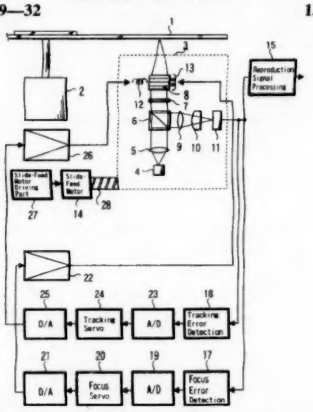
wherein the predetermined path of the slider is non-parallel to the first center line and non-radial with respect to the disk for causing the slider to maintain a substantially constant flying height.

US 6,341,103 B1

OPTICAL DISK APPARATUS CAPABLE OF CORRECTING THE DRIVE CURRENT WAVEFORMS OF STEPPING MOTOR

Ryuji Takeda; Seiichiro Oishi, both of Tokyo, and Tetsuhiro Shiomi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 8, 2000, Appl. No. 500,215
Claims priority, application Japan, Feb. 9, 1999, 11-031634
Int. Cl. G11B 17/22
U.S. Cl. 369—32 13 Claims



1. An optical disk driving apparatus having a slide-feed drive portion that, in order to record information into an optical disk or reproduce information therefrom by radiating an optical spot onto said optical disk by an optical pick-up, causes a change of the incident position of the optical spot radiated from said optical pick-up with respect to a rotation surface of the optical disk,

said slide-feed drive portion using a rotating stepping motor as drive means for changing the position of said optical pick-up with respect to the rotation surface of said optical disk, and comprising waveform generating means for generating a drive current waveform to drive said stepping motor in steps, said drive current waveform having a variation as a function of said steps sufficient to cause each step to produce a substantially equal movement distance of said optical pick-up.

US 6,341,104 B1

OPTICAL PICKUP APPARATUS OF TILT CONTROL TYPE

Hideo Yamaguchi; Tadashi Maki, and Junya Aso, all of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 28, 1999, Appl. No. 362,370
Claims priority, application Japan, Aug. 3, 1998, 10-218804; Aug. 3, 1998, 10-218805
Int. Cl. G11B 7/00
U.S. Cl. 369—44.15 30 Claims

1. An optical pickup apparatus comprising:

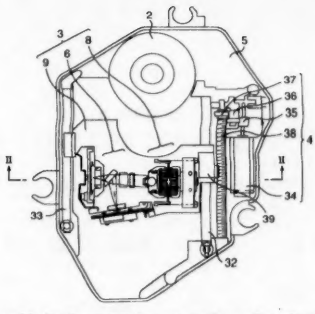
an objective lens for focusing a beam emitted from a light source onto an optical disk;

a lens holding means for holding said objective lens;

a plurality of elastic supporting means for elastically supporting said lens holding means so that it can be moved; and

a support base means for fixedly supporting said elastic supporting means and for fixedly supporting a drive means, said drive means being adapted to movably drive said lens holding means;

wherein said lens holding means has a circular space portion and an almost rectangular opening portion in which said drive means is inserted, said circular space portion being adapted to hold said objective lens and guide said beam emitted from said light source to said objective lens;



wherein said elastic supporting means has a first elastic supporting means having one end thereof secured to said support base means and a second supporting means having one end thereof secured to an almost central part, with respect to a tangential direction, of said almost rectangular opening portion of said lens holding means;

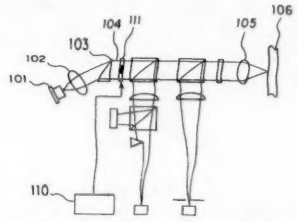
wherein said lens holding means is supported so that it can be pivoted in said tangential direction about said second elastic supporting means as a rotating center.

US 6,341,105 B1

LIGHT BEAM CONDENSING APPARATUS AND METHOD OF DRIVING OPTICAL RECORDING MEDIUM BY APPLYING THE APPARATUS

Kazuhiko Nakane, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of application No. 08/395,922, filed on Feb. 28, 1995, now Pat. No. 5,974,011, which is a division of application No. 08/185,457, filed on Jan. 24, 1994, now abandoned. This application Dec. 24, 1998, Appl. No. 220,633.
Claims priority, application Japan, Mar. 31, 1993, 5-096846
Int. Cl. G11B 5/09
U.S. Cl. 369—44.27 4 Claims



1. A method of driving an optical recording medium by applying a light beam condensing apparatus, the method comprising:

emitting a laser beam from a laser oscillator;

reading track pitch information in a control track area by a condensing beam emitted from said light beam condensing apparatus, transforming said emitted laser beam into a collimate beam, and condensing and introducing said collimate beam into said control track area of the optical recording medium;

modulating said collimate beam by controlling modulation means of said light beam condensing apparatus depending upon said read track pitch information;

setting a condensing spot shape of said condensing beam introduced into said control track area of said optical recording medium to be adaptable to said track pitch;

detecting an amplitude of a tracking servo sensor signal at a time of said setting of the shape of said condensing spot;

adjusting said shape of said condensing spot by controlling said modulation means so as to maximize said detected amplitude; and

performing recording and regeneration of said optical recording medium at said adjusted condensing spot.

US 6,341,106 B1

OPTICAL DISC DRIVE

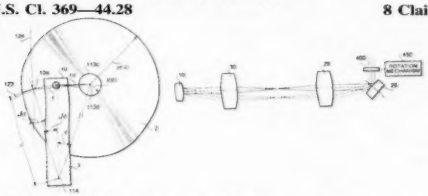
Ryoichi Nakanishi; Hiroshi Nishikawa, both of Saitama-ken; Suguru Takishima, and Shimpei Shinozaki, both of Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1998, Appl. No. 186,202

Claims priority, application Japan, Nov. 5, 1997, 9-318995; Nov. 8, 1997, 9-322421

Int. Cl. G11B *7/00*

U.S. Cl. 369—44.28 **8 Claims**



1. An optical disc drive, comprising:

an arm member carrying an objective optical system, said arm member being rotatable about an axis defined at one end portion of said arm member, said objective optical system being provided at another end portion of said arm member;

a light emitting system that emits lights on an optical disc, via said objective optical system;

a detecting system that receives light reflected by the optical disc via said objective optical system, a beam spot being formed on a light receiving surface of said detecting system, said detecting system detecting data related to an orientation of said beam spot with respect to said light receiving surface,the orientation of said beam spot corresponding to a rotational position of said arm member, and

a control system which determines a current position of said arm member based on said data related to the orientation of said beam spot.

US 6,341,107 B1

OPTICAL STORING APPARATUS

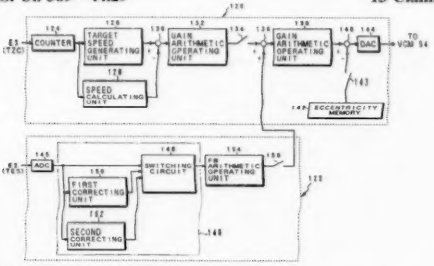
Ichiro Watanabe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 11, 1999, Appl. No. 229,384

Claims priority, application Japan, Jan. 13, 1998, 10-004402; Jun. 22, 1998, 10-175067

Int. Cl. G11B *7/00*

U.S. Cl. 369—44.29 **13 Claims**



1. An optical storing apparatus comprising:

a pickup for moving an irradiating position of a laser beam to an arbitrary track position on a medium;

an information signal processing unit for reproducing at least information to said medium by said laser beam;

a position signal detecting unit for detecting a position signal Y according to a positional deviation amount X in which a track center of fie medium is set to 0 on the basis of return light of said laser beam from the medium;

a position signal correcting unit for outputting a corrected position signal Z obtained by correcting detection sensitivity characteristics for said positional deviation amount to desired characteristics by performing a correcting arithmetic operation using a predetermined non-linear function on the basis of said position signal Y; and

a positioning control unit for performing control such that said laser beam is moved toward a target track of said medium and the laser beam is lead-n controlled to the center of the target track by switching a control mode to a position servo control at a position just before the target track and the laser beam is allowed to trace the target track after completion of the lead in control, wherein said corrected position signal Z is used for at least one of said lead-in control and said tracing of said target track.

US 6,341,108 B1

AUDIO REPRODUCING DEVICE

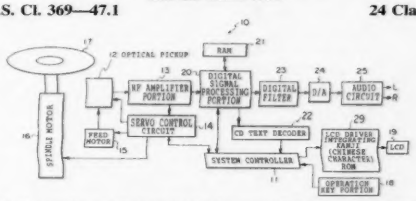
Satoru Ishizuka, Tokyo, Japan, assignor to Aiwa Co., Ltd., Japan

PCT No. PCT/JP97/01081, § 371 Date Aug. 27, 1999, § 102(e) Date Aug. 27, 1999, PCT Pub. No. WO98/44509, PCT Pub. Date Oct. 8, 1998

PCT Filed Mar. 28, 1997, Appl. No. 380,273

Int. Cl. G11B *7/00*

U.S. Cl. 369—47.1 **24 Claims**



1. A sound reproducing device intended for a recording medium on which sound information and character information represented by one or more languages are recorded so that the sound information is reproduced and the character information is displayed on a *display portion, comprising:*

priority order setting means for setting in advance an order of priority of languages in which the character information is displayed; and

control means for displaying the character information on the *display portion by reading out the character information from* the recording medium on a basis of the order of priority set by said priority order setting means.

US 6,341,109 B1

DEFECTIVE AREA REPLACEMENT METHOD AND INFORMATION WRITING/READING DEVICE

***Kinji Kayanuma, Tokyo, Japan, assignor to NEC Corporation,* Tokyo, Japan**

Filed Feb. 3, 2000, Appl. No. 497,410

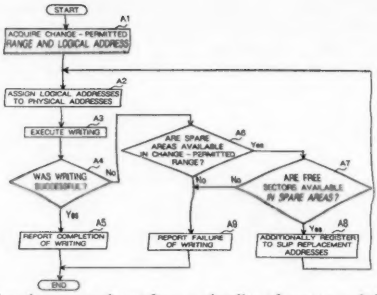
Claims priority, application Japan, Feb. 5, 1999, 11-028959

Int. Cl. G11B *7/00*

U.S. Cl. 369—47.14 **6 Claims**

1. A method of replacing defective areas in an information writing/reading device, wherein said information writing/reading device:

uses a recording medium of disk form in which areas used in data writing are formed by sectors each partitioned into prescribed length, physical addresses being assigned to said sectors without duplication, and user areas that are made up of a plurality of sectors and spare areas for replacement process-



ing that are made up from a plurality of sectors and that are arranged following said user areas being provided in areas of *said recording medium that are used for writing data;*

and writes or reads digital data of sectors that are subject to writing or reading having logical addresses designated by a host device to said recording medium using said logical addresses that are consecutively assigned to physical addresses of each sector of said user areas;

said method of replacing defective areas comprising steps of:

acquiring, by said information writing/reading device, from said host device, a change-permitted range that follows *sectors subject to writing/reading designated by said host* device, wherein said change-permitted range is the range of said logical addresses between a used area and the next used area;

and when an abnormality is detected in a write destination sector during data writing, and if a change-premitted range that follows after said abnormal sector includes a spare area that has free sectors, omitting, by said information writing/reading device, the abnormal sector from logical address assignment, and

for the next sector and succeeding sectors after the abnormal sector, replacing the assignment of sectors by shifting back the assignment of logical addresses within a range that *contains said free sector.*

US 6,341,110 B1

PRE-PIT SIGNAL DETECTING APPARATUS AND INFORMATION RECORDING APPARATUS

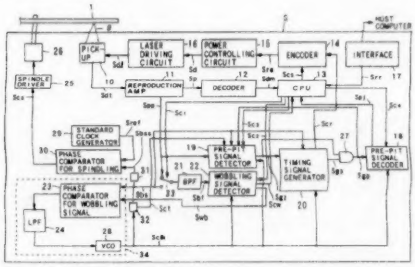
Yuji Tawaragi, Saitama-ken, Japan, assignor to Pioneer Corporation, Tokyo-to, Japan

Filed Sep. 1, 1999, Appl. No. 387,897

Claims priority, application Japan, Sep. 3, 1998, 10-249775

Int. Cl. G11B *7/00*

U.S. Cl. 369—47.2 **10 Claims**



1. A pre-pit signal detecting apparatus, which is used in an information recording apparatus for recording record information onto a record medium on which record control information for controlling a recording operation of said information recording apparatus is recorded in advance by forming a pre-pit on said record medium, for detecting a pre-pit signal corresponding to the *pre-pit when* said information recording apparatus records the record information onto said record medium, said pre-pit signal *detecting apparatus comprising:*

an extracting device, to which a reproduction signal of said record medium is inputted, for extracting and outputting a predetermined signal component, which is used for detecting the pre-pit signal, out of the inputted reproduction signal;

an input controlling device for inputting a standard signal, which is set in advance, to said extracting device in place of the *reproduction signal before the pre-pit signal is detected and* inputting the reproduction signal to said extracting device when the pre-pit signal is detected;

a phase difference detecting device for comparing the standard signal outputted by said extracting device with the standard *signal inputted by said input controlling device, and for* detecting a phase difference generated between the compared standard signals due to an extracting operation of said extracting device before the pre-pit signal is detected; and

a pre-pit detecting device for detecting the pre-pit signal on the basis of the extracted predetermined signal component while canceling the detected phase difference.

US 6,341,111 B1

APPARATUS FOR DETECTING AND RESTORING PHYSICAL IDENTIFICATION

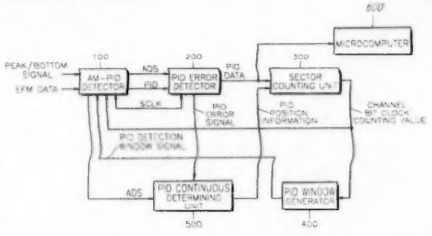
Cheol-gyun Oh, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Oct. 19, 1999, Appl. No. 421,110

Claims priority, application Rep. of Korea, Oct. 19, 1998, 98-43609

Int. Cl. G11B *7/00*

U.S. Cl. 369—47.22 **7 Claims**



1. An apparatus for providing physical identification data (PID) in an optical disk system having a radio frequency amplification unit, the apparatus comprising:

a pattern detector outputting an address mark detection (AMD) signal and a PID pattern upon detecting, in an input signal, an address mark (AM) pattern and said PID pattern in an enable section of said input signal;

a PID error detecting unit decoding said PID pattern, and outputting a PID error signal in response to an error in said decoding;

a sector counting unit counting a remaining sector size and outputting a counted value as a channel bit clock counting value; and

a PID window generator generating a PID detection window signal based on said channel bit clock counting value, said PID detection window signal being provided to said pattern *detector.*

US 6,341,112 B1

MULTI-RATE OPTICAL DISC RECORDING AND REPRODUCING APPARATUS

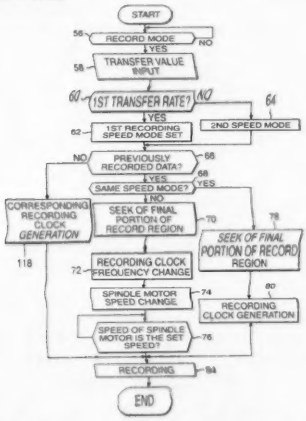
Jin Tae Ro, Seoul; Dong Cheol Kang, Kyungki-Do; Jae Hyoung Lee, Seoul; Tae Joon Park, Seoul, and Kang Soo Seo, Seoul, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Continuation-in-part of application No. 08/752,037, filed on Nov. 19, 1996, now Pat. No. 5,982,726. This application Aug. 27, 1999, Appl. No. 384,381.

Claims priority, application Rep. of Korea, Oct. 19, 1996, 96-46962

Int. Cl. G11B 7/00

U.S. Cl. 369—47.29 20 Claims



1. A multi-rate optical disc recording method for recording a digital signal from a digital signal source on an optical disc, comprising:

controlling the rotating speed of the optical disc to maintain a recording speed at a specific value corresponding to a specific transfer rate;

determining whether the transfer rate of the digital signal to be recorded is lower than the specific transfer rate;

recording the digital signal on the optical disc by performing a recording apparatus that includes moving a pick-up device relative to the disc in a direction opposite a recording direction if the transfer rate of the digital signal is determined to be lower than the specific transfer rate.

US 6,341,113 B1

SERVO DEVICE FOR RECORDING MEDIUM PLAYER

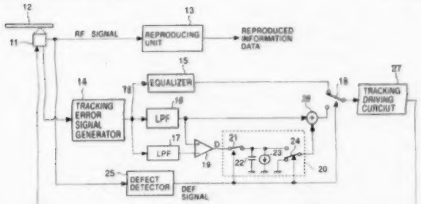
Hideyo Kamiyama, Tokorozawa, Japan, assignor to Pioneer Corporation, Tokyo, Japan

Filed Sep. 9, 1999, Appl. No. 392,662

Claims priority, application Japan, Sep. 10, 1998, 10-257075

Int. Cl. G11B 7/00

U.S. Cl. 369—53.15 3 Claims



1. A servo device for a recording medium player, said servo device generating a servo error signal indicative of an amount of deviation of a position at which a pickup of said recording medium player is reading for playing a recording medium, generating a servo driving signal from the servo error signal through an equalizer, and controlling a reading operation of said pickup in accordance with the servo driving signal, said servo device comprising:

blemish detecting means for detecting a blemish at a reading point on said recording medium by said pickup to generate a blemish detecting signal when a blemish is detected;

first low frequency extracting means for extracting a low frequency component from said servo error signal; and

control means for generating a servo hold signal based on an output signal of said first low frequency extracting means, said servo hold signal including, immediately after the generation of said blemish detecting signal, a signal of opposite polarity to the polarity of said servo error signal immediately before generation of said blemish detecting signal, and for controlling the reading operation of said pickup in accordance with said servo hold signal in place of said servo driving *signal during a time that said blemish detecting signal is* generated.

US 6,341,114 B1

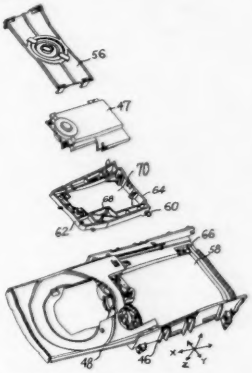
UNIVERSAL LOADER PLATFORM FOR OPTICAL STORAGE DEVICE

Michael Anh Nguyen, 47 Lorong Sarhad, Sarhad Ville, Singapore, 119162; Tang Zheng, and Low Kok Kiong, both of Singapore, Singapore, assignors to Michael Anh Nguyen, Singapore

Filed Mar. 23, 1999, Appl. No. 274,536

Int. Cl. G11B 33/02

U.S. Cl. 369—77.1 ***8 Claims***



1. An optical storage disc drive comprising:

a) one of a variety of traverse mechanisms having a turntable wherein,

said one of the variety of said traverse mechanisms has at least one of a variety of arrangements of attachment means;

b) one of a corresponding variety of adapters having a frame *defining a space for receiving said one of the variety of* traverse mechanisms wherein;

said one of a corresponding variety of the adapters has one of a variety of predetermined arrangements of attachment means for coupling to said one of the variety of predetermined arrangements of attachment means of the one of the variety of said traverse mechanisms wherein;

each of the variety of adapters has an outer edge;

c) a loading mechanism including

a chassis having a predetermined arrangement of attachment means for coupling to the outer edge of the corresponding variety of adapters;

a tray, slidably connected to the top of said chassis, for receiving an optical storage disc;

a motor and gear system, connected to said tray, for moving said tray between an extended position and a retracted position;

a chuck bar, attached to the top of said chassis and extending across the tray in the retracted position;

a chuck disposed on said chuck bar directly above the center of said tray in the retracted position; and

a lifter coupled to said chassis for lifting one of the corresponding variety of said adapters;

such that the lateral center of said turntable coincides with the lateral center of the tray in the retracted position, and the height of the turntable is lower than the height of the tray.

US 6,341,115 B1

DISC DRIVE

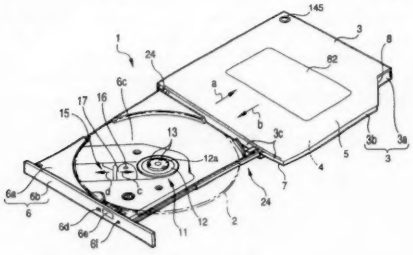
Hisao Otani, and Akihiro Miyazaki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 18, 1999, Appl. No. 336,025

Claims priority, application Japan, Jun. 22, 1998, 10-174271

Int. Cl. G11B *33/02*

U.S. Cl. 369—77.1 **7 Claims**



1. A disc drive comprising:

a disc transport member configured to mount a disc-shaped recording medium on a portion thereof having a width that is smaller than a diameter of the disc-shaped recording medium and further configured to be inserted into and removed from a drive main body while mounting the disc-shaped recording medium which projects from one side of the disc transport member along an edge portion thereof; and

a disc protection member configured to protect the disc from contact with the edge portion provided on at least a surface of the disc transport member facing the mounted disc-shaped recording medium along the one side of the disc transport member where the disc-shaped recording medium projects.

US 6,341,116 B1

COMPACT OPTICAL PICK-UP HEAD EMPLOYING NON-DIFFRACTIVE ELEMENT

Yuan-Chin Lee, and Zu Wen Chao, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Aug. 16, 1999, Appl. No. 376,666

Claims priority, application Taiwan, Apr. 13, 1999, 88105833

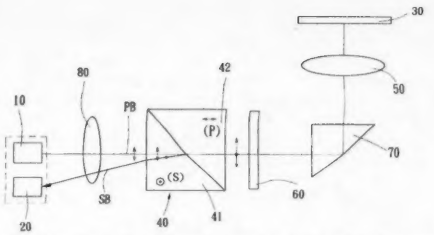
Int. Cl. G11B *7/12*

U.S. Cl. 369—112.02 **7 Claims**

1. A compact pickup head for recording and reproducing information on and from an optical data recording medium, comprising at least:

a laser source, for generating a linearly polarized beam for recording and reproducing information on said optical data recording medium;

a photo detector, packaged in the same substrate with said laser source, for transforming a returning beam reflecting from said optical data recording medium into electrical signals;



a birefringent prism, disposed in an optical path of said compact pickup head, consisted of two conjunctive crystals made from a birefringent material, for separating said returning beam from a source beam emitted from said laser source, and passing almost the whole power of the laser beams;

an objective lens, disposed in said optical path, for focusing said source beam onto said optical data recording medium; and

a quarter-wave plate, disposed in said optical path between said birefringent prism and said objective lens, for changing polarization direction of said returning beam and making said returning beam having a polarized direction perpendicular to that of said source beam.

US 6,341,117 B1

APPARATUS AND METHOD FOR CONTROLLING POWER OF LASER DIODE USED FOR OPTICAL RECORDING MEDIA

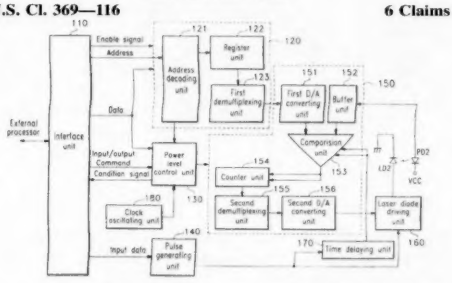
Jin-Gyo Seo, Seoul, Rep. of Korea, assignor to Samsung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 11, 1998, Appl. No. 209,457

Claims priority, application Rep. of Korea, Dec. 11, 1997, 97/67676

Int. Cl. G11B *7/007*

U.S. Cl. 369—116 **6 Claims**



4. A method for controlling power to a laser diode in optical recording media, comprising:

outputting power level decoding data corresponding to a plurality of power levels by receiving and demultiplexing data corresponding to a target power level;

when an input/output command from an interface is received, converting the target power level into target power level decoding data;

generating a first pulse having a predetermined waveform based on an input data from the interface;

delaying the first pulse, to create a time delayed first pulse; and

keeping a power level of the laser diode constant by

analog converting the target power level decoding data;

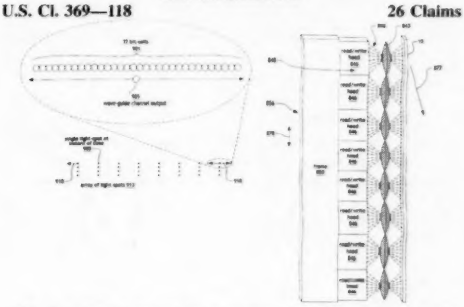
selecting a required power level using the time delayed first pulse; and

outputting a power level compensating signal.

US 6,341,118 B1
MULTIPLE CHANNEL SCANNING DEVICE USING OVERSAMPLING AND IMAGE PROCESSING TO INCREASE THROUGHPUT

Adam Thomas Drobot, Annandale; Albert Myron Green, Alexandria; Edward Alan Phillips, Great Falls; Robert Courtney White, Fairfax, and Newell Convers Wyeth, Oakton, all of Va., assignors to Science Applications International Corporation, San Diego, Calif.

Filed Jun. 2, 1998, Appl. No. 88,780
Int. Cl. G11B *7/00*
U.S. Cl. 369—118 **26 Claims**



25. A scanning device for scanning a target surface with data cells comprising:

a scanning head with an array of input apertures that receive light reflected from said target surface from a same one of said data cells;

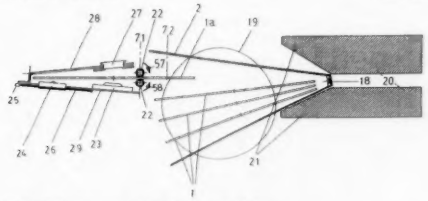
at least one detector configured to detect light received by said array of input apertures; said detector generating a signal indicating an estimate of one of a set of possible configurations of said same one of said data cells by combining information derived from light received by all of said input apertures; and

an oscillating motor connected to said scanning head to oscillate said scanning head relative to said target surface.

US 6,341,119 B1
DISK STORAGE MAGAZINE AND RECORDING/REPRODUCING APPARATUS

Kozo Ezawa, Katano; Teruyuki Takizawa, Neyagawa, and *Shigeto Ueno, Toyonaka, all of Japan, assignors to* Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 8, 1999, Appl. No. 391,378
Claims priority, application Japan, Sep. 8, 1998, 10-253131; Mar. 30, 1999, 11-087349
Int. Cl. G11B *17/22;23/023*
U.S. Cl. 369—178 **12 Claims**



1. A disk storage magazine comprising:

a magazine case capable of being opened and closed, which is made up of a first cover member and a second cover member; and

a disk holding member capable of holding disks, at least a part of which is fixed and supported on said first cover member and said second cover member,

wherein inside said magazine case, said disks are held by said disk holding member in a densely stacked state, by relatively turning said first and second cover members around a turning axis provided at the ends of said first and second cover members, said magazine case is opened or closed, and said disk holding member changes the stacking interval of said disks in accordance with the opening/closing operation of said magazine case,

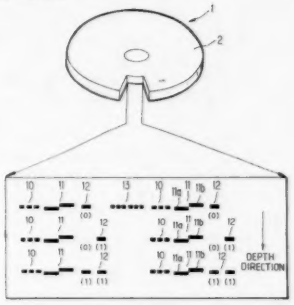
wherein said disk holding member comprises an expandable plate member in the form of a bellows having a plurality of substantially V-shaped portions, said substantially V-shaped portions hold the outer peripheral edge of each end of said disk located substantially in parallel with said turning axis and substantially in the diameter direction of said disk, the expanding/contracting direction of said plate member is substantially the same as the turning direction of said first and second cover members, and the vertical length between adjacent pointed tips of said substantially V-shaped portions is changed by moving said plate member in a folding manner in accordance with the opening/closing turning operation of said magazine case in order to enable the stacking interval of said disks to change around said turning axis and said disk to move in the direction perpendicular to said turning axis, whereby said disk is inserted into and removed from said magazine case,

wherein a part of said substantially V-shaped portions other *than both end portions in the insertion/removal direction of* said disk is torn and wherein said substantially V-shaped portions are configured so that untorn portions thereof do not exist in a plane region produced by vertically projecting the disk in a state of being stored in said magazine case.

US 6,341,120 B1
THREE-DIMENSIONAL OPTICAL MEMORY

Mitsuru Sawano, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 14, 1999, Appl. No. 311,741
Claims priority, application Japan, May 18, 1998, 10-135307
Int. Cl. G11B *7/24*
U.S. Cl. 369—275.1 **4 Claims**



1. A three-dimensional optical memory, comprising:

a recording medium, including a plurality of layers in a thickness direction thereof;

a plurality of recording surfaces respectively formed on said layers, the recording surfaces each having data recording tracks;

sample servo marks, onto which an optical beam is focused, provided respectively on said recording surfaces,

wherein said sample servo marks each have at least two mark portions,

wherein the at least two mark portions are arranged in a zig-zag manner in the thickness direction of said recording medium, thereby interposing one of said data recording tracks,

wherein a difference in positions of the at least two mark portions in the thickness direction of the recording medium is set larger than a focus depth of the optical beam which is emitted from an optical head, and

wherein said recording surfaces have a plurality of indication marks which are unique for each recording surface, and at

least one of the indication marks is provided in close proximity to each of the sample servo marks on said data recording tracks.

US 6,341,121 B1
RECORDER

Hideaki Yamada, Shimo-Suwa-machi, Japan, assignor to Seiko Epson Corporation, Japan

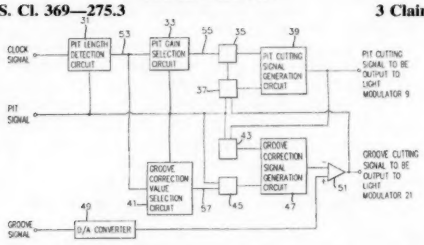
PCT No. PCT/JP97/04645, § 371 Date Aug. 12, 1998, § 102(e) Date Aug. 12, 1998, PCT Pub. No. WO98/27550, PCT Pub. Date Jun. 25, 1998

PCT Filed Dec. 16, 1997, Appl. No. 117,834

Claims priority, application Japan, Dec. 16, 1996, 8-336119

Int. Cl. G11B *7/24*

U.S. Cl. 369—275.3 **3 Claims**


CLOCK SIGNAL
PIT SIGNAL
GROOVE SIGNAL
PIT LENGTH DETECTION CIRCUIT
PIT GAIN SELECTION CIRCUIT
PIT CUTTING SIGNAL GENERATION CIRCUIT
PIT CUTTING SIGNAL TO BE OUTPUT TO LIGHT MODULATOR 9
GROOVE CORRECTION VALUE SELECTION CIRCUIT
GROOVE CORRECTION SIGNAL GENERATION CIRCUIT
GROOVE CUTTING SIGNAL TO BE OUTPUT TO LIGHT MODULATOR 21
D/A CONVERTER

1. A laser cutting apparatus for cutting pits and grooves in an optical disk wherein said grooves are formed in accordance with a length of said pits comprising:

a pit gain selection circuit for converting a signal corresponding to pit length data into gain data;

a pit cutting signal generation circuit for receiving said gain data and selecting gain data therefrom proportional to each pulse duration of a pit cutting signal and converting said selected gain data into a first analog signal;

a groove correction value circuit for converting a groove power correction value or a groove correction pulse frequency into a groove correction value according to said pit length data;

a groove correction signal generation circuit for receiving said groove correction value and calculating a magnitude of groove signal correction and converting said magnitude of groove signal correction into a second analog signal; and

a subtractor receiving said second analog signal and subtracting said second analog signal from a groove signal to yield a control signal whereby a power level of a light beam used for forming said grooves and pits is adjusted by said second control signal.

US 6,341,122 B1
OPTICAL INFORMATION RECORDING MEDIUM

Yoshihisa Usami; Michihiro Shibata; Noboru Komori; Toshio Ishida, all of Odawara, and Takashi Morohashi, Hamura, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

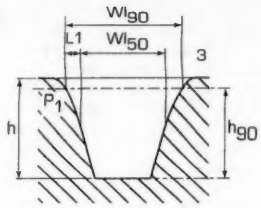
Filed Mar. 15, 2000, Appl. No. 525,479

Claims priority, application Japan, Mar. 15, 1999, 11-068586; Mar. 15, 1999, 11-068587

Int. Cl. G11B *7/24*

U.S. Cl. 369—275.4 **17 Claims**

1. An optical information recording disc comprising a transparent disc substrate provided with a spiral pregroove, a recording dye layer placed in the pregroove on which information is recorded by irradiation with a laser beam, and a light-reflecting layer, arranged in order, wherein the pregroove formed in the area between an inner circle having a radius corresponding to a half of a radius of the disc substrate and an outer circle having a radius corresponding to 19/20 of the radius of the disc substrate has a radiused top corner at least one side, under the condition that the radius of the



radiused corner on the outer circle is more generous than the radius of the radiused corner on the inner circle under the following conditions:

$$Wl_{60}-Wl_{50}<W2_{90}W2_{30}$$

wherein $W1_{90}$ means a width of the pregroove on the inner circle which is measured at a depth of 10% of the depth of the pregroove and $W1_{50}$ means a half width of the pregroove on the inner circle, while $W2_{90}$ means a width of the pregroove on the outer circle which is measured at a depth of 10% of the depth of the pregroove and $W2_{50}$ means a half width of the pregroove on the outer circle.

US 6,341,123 B1
DIGITAL AUDIO BROADCASTING RECEIVER

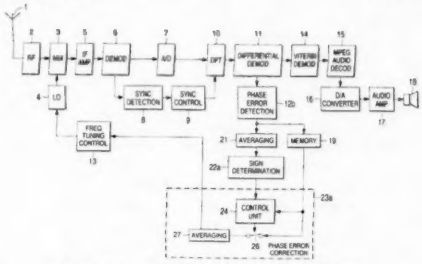
Masahiro Tsujishita; Masayuki Ishida; Kenichi Taura; Tadatoshi Ohkubo, and Masakazu Morita, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1998, Appl. No. 15,768

Claims priority, application Japan, Jan. 31, 1997, 9-018592

Int. Cl. H04L *27/06*

U.S. Cl. 370—210 **7 Claims**



1. A digital audio broadcasting receiver comprising:

a local oscillator corresponding to digital broadcasting of a multicarrier transmission system and used in the frequency shift of a received signal;

complex Fourier transforming unit for subjecting the signal frequency-shifted by said local oscillator to complex discrete Fourier transformation;

a differential demodulation unit for detecting a phase difference between two successive symbols on an identical carrier;

a phase error detecting unit for detecting a phase error of output data from said differential demodulation unit;

a storage unit for storing the phase error detected by said phase error detection unit;

an average value processing unit for calculating an average value of phase errors of the carriers;

a sign determining unit for determining a sign of an output from said average value processing unit;

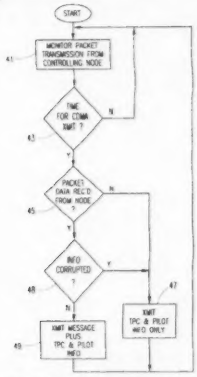
a phase error correcting unit for calculating an average value of an output from said sign determining unit and the phase error having the same sign as that of the output from said sign determining unit and stored in said storage unit; and

a frequency tuning control unit to which an output from said phase error correcting unit is inputted and which controls a frequency of said local oscillator.

US 6,341,124 B1
ACCOMMODATING PACKET DATA LOSS AT BASE STATIONS INTERFACING BETWEEN A PACKET SWITCHED NETWORK AND A CDMA MACRODIVERSITY NETWORK

Lars B. Johansson, Linköping; Paul Peter Butovitsch, Bromma, and Tomas Sandin, Stockholm, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 13, 1998, Appl. No. 42,359
Int. Cl. H04B *7/216*
U.S. Cl. 370—335 **19 Claims**



1. A method of operating a plurality of base stations in Code Division Multiple Access macrodiversity mode to communicate a message to a mobile station via an air interface, comprising:

attempting to communicate the message to the base stations via a packet network;

determining, at one of the base stations, whether the message is corrupted after the attempted communication from packet network to the one base station;

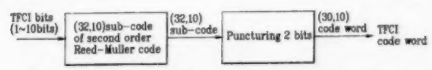
if the message is not successfully communicated by the packet network to one of the base stations, refraining from communicating any message from the one base station to the mobile station; and

if the message is successfully communicated by the packet network to the one base station, communicating the message from the one base station to the mobile station via the air interface using Code Division Multiple Access.

US 6,341,125 B1
METHOD FOR IMPROVING TFCI TRANSPORTATION PERFORMANCE

Sung Kwon Hong, Kyonggi-do; Sung Lark Kwon, Seoul; Young Woo Yun, Seoul, and Ki Jun Kim, Seoul, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Nov. 17, 2000, Appl. No. 714,457
Claims priority, application Rep. of Korea, Nov. 19, 1999, 99-51599
Int. Cl. H04B *7/216*; **H04Q** *7/20*; **G06F** *11/00*
U.S. Cl. 370—335 **29 Claims**



1. A method for transmitting a Transport Format Combination Indicator(TFCI) in a wireless communication system, comprising the steps of:

(1) coding TFCI information bits into TFCI code word;

(2) repeating said TFCI code word for predetermined times;

(3) selecting bits from the repeated code word so that the bits to be selected can be dispersed in the code word block which is obtained by repeating the bits of the TFCI code word;

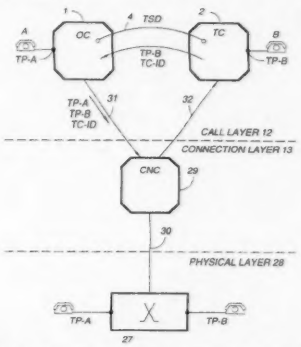
(4) puncturing the selected bits from the repeated code word; and,

(5) transmitting the code word over a radio frame.

US 6,341,126 B1
INHOMOGENEOUS CONNECTIONS

Staffan Andersson, Enskede, and Lars John Ola Dagberg, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson (publ), Stockholm, Sweden

Continuation of application No. PCT/SE97/00626, filed on Apr. 14, 1997. This application Oct. 23, 1998, Appl. No. 177,552.
Claims priority, application Sweden, Apr. 26, 1996, 9601605
Int. Cl. H04L *12/28*
U.S. Cl. 370—351 **31 Claims**



1. A call and connection separated network, comprising:

a first switch,

a second switch lacking a direct transmission connection with the first switch, said first switch having a concentration to an external network at a first termination point and said second switch having a connection to the external network at a second termination point,

a first routing number table comprising first catalogue numbers which belong to a numbering plan of an external network but which are assigned to the second switch so as to route a call from said first switch to said second switch via the external network,

a second routing number table comprising second catalogue numbers which belong to the numbering plan of said external network but which are assigned to the first switch so as to route a call from the second switch to the first switch via the external network,

a signalling path extending between the first and second switches,

at the originating side of a call:

a first process for signalling, over the signalling path, service related information and the destination address of the call to the terminating side of the call,

a second process in operative relationship with the first process for establishing a connection to said first terminating point and for requesting a routing number from the termination side of the call,

at the terminating side of said call:

a first peer process to said first process for signalling the termination point of said call to the first process,

a second peer process to said second process, for selecting a routing number and for associating the selected routing number with its own identity,

at the originating side of said call:

a third process for signalling to the external network a request to set up a connection from the first terminating point, through the external network and to the second terminating point, said request containing as destination address of the requested connection in the external network the routing number associated with the second peer process,

at the terminating side of said call:

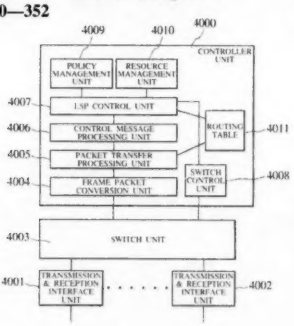
a third peer process to said third process for receiving the selected routing number and for sending the termination point at which it arrived to the satellite domain to said second peer process, and

at the terminating side of said call:

said second peer process upon receipt of said termination point from said third peer process establishing a connection

through said satellite domain from said second terminating point to the termination point of the call, thus completing an inhomogeneous connection from the originating side to the terminating side of the call via the external network.

US 6,341,127 B1
NODE DEVICE AND METHOD FOR CONTROLLING LABEL SWITCHING PATH SET UP IN INTER-CONNECTED NETWORKS
Yasuhiro Katsube, Kanagawa; Takeshi Saito, Tokyo-to; Yoshiaki Takabatake, Kanagawa-ken; Mikio Hashimoto, Chiba-ken, and Hisako Tanaka, Tokyo-to, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 13, 1998, Appl. No. 114,177
Claims priority, application Japan, Jul. 11, 1997, 9-186811
Int. Cl. H04Q *11/04*
U.S. Cl. 370—352 **31 Claims**



1. A router device, comprising:

a switch unit for carrying out a label switching with respect to entered packets according to a correspondence between an input side label for identifying a channel from which a packet stream is to be entered and an output side label for identifying a channel from which the packet stream is to be outputted;

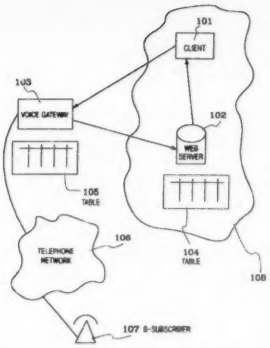
a memory unit for storing a policy information indicating a permitted starting point of a label switching path for which a packet transfer by the label switching is to be permitted;

a receiving unit for receiving a request message for requesting a set up of a requested label switching path through the router device, the request message containing a starting point information indicating a starting point node/network of the requested label switching path and a stream information indicating a desired packet stream to be transferred through the requested label switching path; and

a control unit for judging whether or not to permit the set up of the requested label switching path by comparing the starting point information contained in the request message as received by the receiving unit with the policy information as stored in the memory unit, and setting up the requested label switching path through the router device for the desired packet stream indicated by the stream information contained in the request message as received by the receiving unit when the set up of the requested label switching path is judged as permitted.

US 6,341,128 B1
PROVIDING CALL CENTERS WITH VOICE GATEWAYS
Johan Svedberg, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson (publ), Stockholm, Sweden
Filed Nov. 10, 1998, Appl. No. 188,390
Claims priority, application Sweden, Nov. 11, 1997, 9704128
Int. Cl. H04L *12/66*
U.S. Cl. 370—352 **11 Claims**

1. A method for placing a voice call from a client on an internet to a B-subscriber in a telephone system, wherein the call is



established through the internet and the telephone system via a voice gateway which is provided by a provider of voice gateway services between the internet and the telephone system, the method comprising the steps of:

activating, by the client, a link on a web-page of a web-server in the internet, wherein a telephone number to the B-subscriber is on the web-page and is associated with the link;

transferring a first set of data from the web-server to the voice gateway, the first set of data comprising an IP-address for the client, the telephone number, and a time stamp;

storing the first set of data at the voice gateway;

transferring an IP-address of the voice gateway from the web-server to the client;

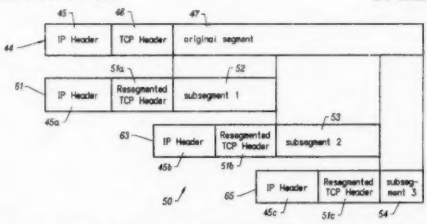
transferring the telephone number from the web-server to the client;

transferring the telephone number from the client to the voice gateway via the IP-address of the voice gateway;

verifying, in the voice gateway, that the client is authorized to use the voice gateway to make a call, based on the stored first set of data and an IP-address of the calling, client fetched by the voice gateway from an IP-stack, wherein the verification is considered to have failed a) if the client contacts the voice gateway later than a time that is determined by the time stamp plus a constant, or b) if the stored IP-address of the client does not correspond to the IP-address of the client that is fetched from the IP-stack, or c) if the stored telephone number does not correspond to the one transferred from the client; and

setting up the call, when the step of verifying indicates that the client is authorized to use the voice gateway, between the B-subscriber and the client over the voice gateway.

US 6,341,129 B1
TCP RESEGMENTATION
Theodore Schroeder, San Jose; John Hayes, Santa Cruz, and Wayne Hathaway, Sunnyvale, all of Calif., assignors to Alteon Networks, Inc., San Jose, Calif.
Filed Apr. 3, 1998, Appl. No. 55,031
Int. Cl. H04L *12/28;* **H04J** *3/24*
U.S. Cl. 370—354 **24 Claims**



1. An apparatus for exchanging information packets between two or more hosts over an electronic network, wherein at least one

of said hosts transmits and receives information packets that differ in size from those of the other of said two or more hosts, comprising:

a resegmentation entity located within either of said one or more of said hosts or their respective network interfaces or within said electronic network, for resegmenting larger information segments within said information packets into a plurality of smaller subsegments within a plurality of corresponding information subpackets wherein a receiving host receives information packets that are of a size wherein said information packets appear as if they have been transmitted specifically for said receiving host, wherein said information packets are independently processable without IP reassembly required, and wherein each of said received information packets is an IP datagram which includes an IP header, a resegmented TCP header, and resegmented TCP data.

US 6,341,130 B1

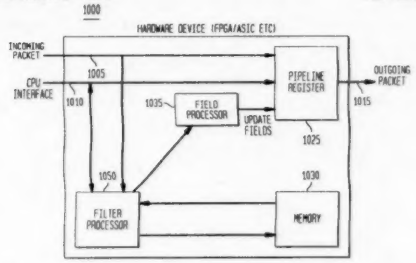
PACKET CLASSIFICATION METHOD AND APPARATUS EMPLOYING TWO FIELDS

Tirunell V. Lakshman, Morganville, and Dimitrios Stiliadis, Matawan, both of N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Provisional application No. 60/073,996, filed on Feb. 9, 1998. This application Sep. 2, 1998, Appl. No. 146,122.

Int. Cl. H04L *12/66*

U.S. Cl. 370—389 **30 Claims**



1. Apparatus for associating at least one filter rule with a packet, each filter rule and the packet characterized by values in first and second dimensions, the filter rule to be applied to the packet by a router in a communications network, the apparatus comprising:

a storage medium adapted to store a filter-rule table, each entry of the filter-rule table corresponding to a prefix value having a length in the first dimension and at least one interval in the second dimension; and

a classification processor comprising:

a comparator adapted to identify each prefix value matching the value of the packet in the first dimension, and

a filter processor adapted to retrieve, from the filter-rule table, each interval associated with each prefix value identified by the comparator containing the value of the packet in the second dimension,

wherein the filter processor identifies as a solution interval the interval associated with the prefix length characterized by an associated predetermined metric and containing the second field, and

wherein the classification processor associates the filter rule corresponding to the solution interval with the packet.

US 6,341,131 B1

MINI CELLS WITH VARIABLE PAYLOAD SIZE

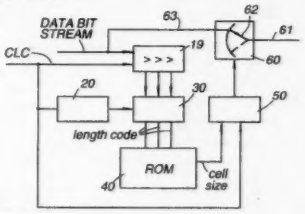
Lars Göran Vilhelm Eneroth, Tyresö; Karl Anders Näsman, Solna, and Lars-Göran Petersen, Tuma, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Filed Jan. 27, 1997, Appl. No. 789,534

Claims priority, application Sweden, Jan. 25, 1996, 9600279

Int. Cl. H04L *12/28*

U.S. Cl. 370—395 **34 Claims**



1. A method for indicating the length of a mini cell in a communications system, the method comprising the steps of:

forming an ATM cell including a header portion and a payload portion, wherein said payload portion includes at least a portion of the mini cell; and

providing a fixed size mini cell length indicator in a header portion of the mini cell, wherein said fixed size mini cell length indicator is non-linearly coded.

US 6,341,132 B1

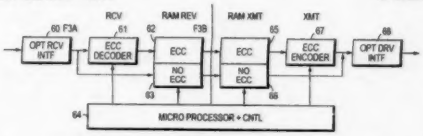
ATM NODE HAVING LOCAL ERROR CORRECTING PROCEDURES

Alain Benayoun, Cagnes sur Mer; Jean-Francois Le Pennec, Nice; Patrick Michel, La Gaude, and Gilles Toubol, Villeneuve Loubet, all of France, assignors to Cisco Technology, Inc., San Jose, Calif.

Filed Feb. 4, 1998, Appl. No. 18,742

Int. Cl. H04L *12/56*

U.S. Cl. 370—397 **8 Claims**



8. A method for operation a telecommunication node for Asynchronous Transfer Mode (ATM), comprising

performing Segmentation and Reassembly (SAR) of ATM cells, said SAR means particularly providing Virtual Channel Identifier (VCI) and Virtual Path Identifier (VPI) translation and comprising a Direct Memory Access (DMA) mechanism for a storage external to said SAR means, said SAR means performing a first DMA access when said VCI/VPI are representative of an Error Code Correcting (ECC) procedure to be carried out in said node, and said SAR means performing a second DMA access at a second address when said VCI/VPI correspond to an ATM message that does not require a local ECC procedure;

performing an ECC procedure on ATM cells by a Reed Solomon Coder and Decoder; controlling said Reed-Solomon Coder and Decoder for performing an error correcting procedure in response to the detection of said first DMA access.

US 6,341,133 B1

INFORMATION PROVIDING APPARATUS AND PORTABLE COMMUNICATION TERMINAL

Yoji Kawamoto, Tokyo, and Akira Kurihara, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

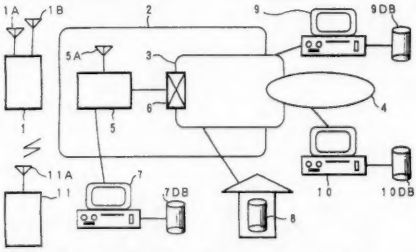
PCT No. PCT/JP96/02935, § 371 Date Jun. 11, 1997, § 102(e) Date Jun. 11, 1997, PCT Pub. No. WO97/14244, PCT Pub. Date Apr. 17, 1997

PCT Filed Oct. 9, 1996, Appl. No. 860,002

Claims priority, application Japan, Oct. 11, 1995, 7-263187

Int. Cl. H04M *11/08;* **H04Q** *7/04*

U.S. Cl. 370—401 **8 Claims**



1. An information providing apparatus, comprising:

a portable communication terminal having a telephone communication means operable to access a server and/or a data base connected to a portable telephone system network so as to receive multimedia information from said server and/or data base, and a human-machine interface means operable to receive multimedia information supplied from said telephone communication means; and

a portable communication terminal server having an external communication processing means operable to access an external server connected to an external information communication network so as to receive multimedia information from said external server, a data processing means for processing or converting multimedia information received from said external communication processing means, and a transfer means for transferring multimedia information from said external communication processing means and/or said data processing means to said portable communication terminal via said portable telephone system network;

wherein communication between said external communication processing means and said external server is carried out using a modified Transmission Control Protocol/Internet Protocol (TCP/IP) as an administrative protocol and using a Hypertext Transfer Protocol (HTTP) as an application protocol, said modified TCP/IP protocol using a header that does not include an Internet Protocol (IP) address and a port number; and

wherein communication between said portable communication terminal and said portable communication terminal server is carried out using a protocol having an error correction code, a re-transmission capability, a transmission sequence number and an answer acknowledge number.

US 6,341,134 B1

PROCESS FOR THE ARRANGEMENT OF EQUITABLE-LOSS PACKETS

Francois Toutain, Thorigné-Fouillard; Maher Hamdi, Tunisia, and Pierre Rolin, Palaiseau, all of France, assignors to France Telecom SA, Paris, France

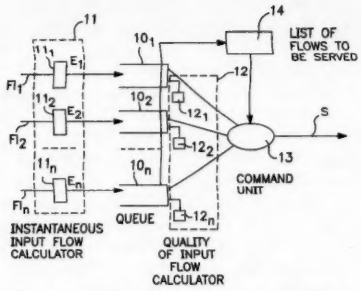
Filed Mar. 4, 1998, Appl. No. 34,371

Claims priority, application France, Apr. 23, 1997, 97 05239

Int. Cl. H04L *12/28*

U.S. Cl. 370—412 **11 Claims**

1. A process establishing an order of outflowing data packets to a network node of output links, said process comprising the steps of:



(a) receiving a plurality of input data packet flows F from a plurality of input sources;

(b) reserving a minimum quantity r_i of said data packets for each of said plurality of input flows F of data packets;

(c) allocating a quantity $x_i(t)$ of said data packets

(d) maintaining at all time a ratio K(t) between two parts of each active one of said input flows F of said data packets, a first of said two parts $\Delta x_i(t)$ being a quantity allocated above the minimum reserve r_i, and a second of said two parts $e_i(t)$ being an instantaneous quantity $\lambda_i(t)$ above the minimum reserve quantity r_i.

US 6,341,135 B1

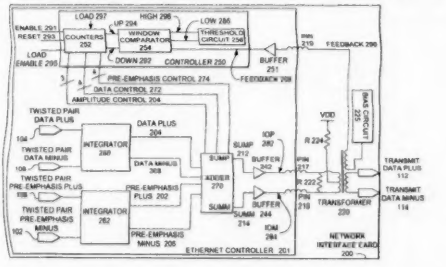
LOW POWER BUFFER SYSTEM FOR NETWORK COMMUNICATIONS

Marwan A. Fawal, Santa Clara; Burton B. Lo, San Francisco, and Anthony L. Pan, Fremont, all of Calif., assignors to 3Com Corporation, Santa Clara, Calif.

Filed Feb. 26, 1998, Appl. No. 32,382

Int. Cl. G01R *19/00*

U.S. Cl. 370—419 **13 Claims**



1. A circuit for buffering a local area network communications signal prior to a transmission of said local area network communications signal, said circuit comprising:

an integrated circuit coupled to receive a twisted pair data transmission, including a first signal and a second signal;

a first transistor being formed in said integrated circuit, said first transistor coupled to generate a positive component of the local area network communications signal from the first signal, said first transistor being configured as a first amplifier for amplifying said first signal to generate said positive component; and

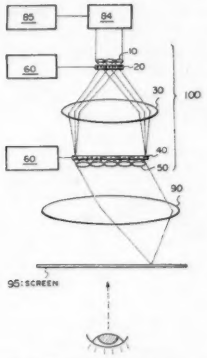
a second transistor being formed in said integrated circuit, said second transistor coupled to generate a negative component of the local area network communications signal from the second signal, said second transistor being configured as a second amplifier for amplifying said second signal to generate said negative component.

US 6,341,136 B1

OPTICAL BEAM DEFLECTOR MODIFYING PHASES OF RESPECTIVE PORTIONS OF OPTICAL BEAM BY TWO ARRAYS OF OPTICAL PHASE MODULATORS

Hiroyuki Hiiro, Kaisei-machi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-Ken, Japan

Filed Mar. 6, 2000, Appl. No. 519,885
Claims priority, application Japan, Mar. 4, 1999, 11-057212
Int. Cl. H01S *3/10;3/08*
U.S. Cl. 372—26 5 Claims



1. An optical beam deflector comprising:

an array of lenses which collect a first plurality of portions of an optical beam into a plurality of spots, respectively;

an array of first optical phase modulators which modulate, at or in vicinities of the plurality of spots, phases of the first plurality of portions of the optical beam;

a first Fourier transform lens which performs Fourier transformation on the optical beam output from the array of first optical phase modulators, to generate a second plurality of portions of the optical beam;

an array of second optical phase modulators which modulate phases of said second plurality of portions of the optical beam;

an array of second Fourier transform lenses which collect the second plurality of portions of the optical beam after the phases of the second plurality of portions are modulated by the array of second optical phase modulators, and perform inverse Fourier transformation on the second plurality of portions of the optical beam; and

a driving unit which drives said arrays of first and second optical phase modulators so that the second plurality of portions of the optical beam which exit from the array of second Fourier transform lenses as a whole are directed in a desired direction of deflection or to a desired point.

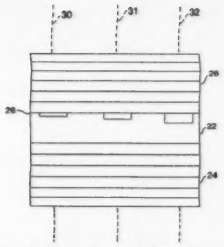
US 6,341,137 B1

WAVELENGTH DIVISION MULTIPLEXED ARRAY OF LONG-WAVELENGTH VERTICAL CAVITY LASERS

Vijaysekhar Jayaraman, Goleta; Jonathan Geske, and Frank Peters, both of Lompoc, all of Calif., assignors to Gore Enterprise Holdings, Inc., Newark, Del.

Filed Apr. 27, 1999, Appl. No. 300,252
Int. Cl. H01S *5/00*
U.S. Cl. 372—50 2 Claims

1. An array of vertical cavity surface emitting lasers (VCSELs) comprising: at least two VCSELs each having an epitaxial structure, wherein the epitaxial structure of each VCSEL in the array comprises a wafer fused interface and a buried semiconductor recess disposed at the wafer-fused interface, wherein each recess



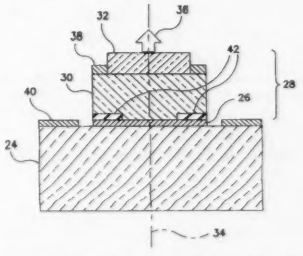
has a different depth to enable each VCSEL to emit at a different wavelength.

US 6,341,138 B1

CONSTANT TEMPERATURE PERFORMANCE LASER

Frank Peters, Lompoc, and Michael H. MacDougal, Goleta, both of Calif., assignors to Gore Enterprise Holdings, Inc., Newark, Del.

Filed Jun. 16, 1999, Appl. No. 334,590
Int. Cl. H01S *3/08*
U.S. Cl. 372—96 6 Claims



1. An improved vertical cavity surface emitting laser (VCSEL) wherein the improvement comprises:

an output mirror stack having a semiconductor distributed Bragg reflector and a dielectric distributed Bragg reflector;

wherein the semiconductor distributed Bragg reflector has an index contrast ratio that changes with temperature;

wherein the dielectric distributed Bragg reflector has an index contrast ratio that changes less with temperature than that of the semiconductor distributed Bragg reflector;

wherein the distributed Bragg reflector and the dielectric distributed Bragg reflector are made from different material;

wherein a center wavelength of the semiconductor distributed Bragg reflector is different than a center wavelength of the dielectric distributed Bragg reflector;

wherein the VCSEL has a lasing wavelength; and

the center wavelength of the dielectric distributed Bragg reflector is at a shorter wavelength than the lasing wavelength.

US 6,341,139 B1

SEMICONDUCTOR-LASER-PUMPED SOLID STATE LASER

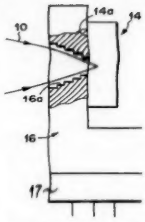
Hisashi Ohtsuka, and Yoji Okazaki, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 27, 1999, Appl. No. 299,656
Claims priority, application Japan, Apr. 28, 1998, 10-118659
Int. Cl. H01S *3/17*
U.S. Cl. 372—107 20 Claims

1. A semiconductor-laser-pumped solid state laser comprising:

a solid state laser medium doped with a rare earth element;

a semiconductor laser which emits a pumping laser beam for pumping the solid state laser medium; and



a holder, wherein a pumping light incident side end face of the solid state laser medium is bonded to a first side of said holder and wherein the holder is provided with a through hole from the first side of said holder to a second side of said holder through which the pumping laser beam impinges upon the pumping light incident side end face of the solid state laser medium, and wherein said through hole has a first cross-sectional area on the first side of said holder and a second cross-sectional dimension different from the first cross-sectional area on the second side of said holder.

US 6,341,140 B1

CODE SYNCHRONIZATION APPARATUS OF MULTI-CARRIER DIRECT SEQUENCE SPREAD SPECTRUM COMMUNICATION SYSTEM

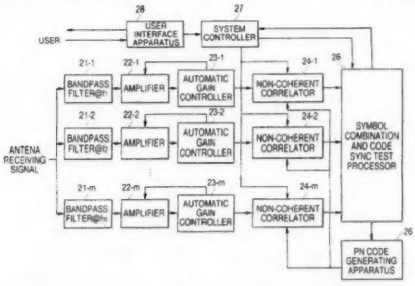
Dong Wook Lee, and Hun Lee, both of Daejon-Shi, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejon, Rep. of Korea

Filed Aug. 12, 1998, Appl. No. 132,713

Claims priority, application Rep. of Korea, Dec. 8, 1997, 97-38475

Int. Cl. H04L *27/30;* **A61F** *2/06*

U.S. Cl. 375—130 **4 Claims**



1. A code synchronization apparatus in a multi-carrier direct sequence spread spectrum communication system for synchronizing pseudo noise codes in received signals with reference pseudo noise codes locally generated in a receiver, comprising:

a plurality of bandpass filter for filtering received signals at each carrier frequency so as to perform a code synchronization of said received signals;

a plurality of amplifiers for amplifying the outputs of said bandpass filters;

a plurality of automatic gain controlling means for controlling the gain of said amplifiers using the outputs of said amplifiers as inputs, so that the output magnitudes of gain controlled signals have a constant value;

a pseudo noise code generator for generating pseudo noise codes;

a plurality of non-coherent correlators for performing non-coherent detection using said gain controlled signals and the pseudo noise codes; and

a symbol combining and code synchronization test processor for commanding said pseudo noise code generator to generate the pseudo noise codes, and for combining and testing the output of said non-coherent correlators to determine whether there is code synchronization.

US 6,341,141 B1

METHOD AND APPARATUS FOR DETECTING SPECTRUM SPREAD SIGNALS

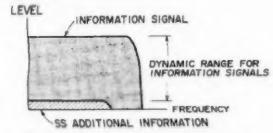
Takashi Kohashi; Akira Ogino; Hisayoshi Moriwaki, all of Tokyo; Yuji Kimura, Kanagawa, and Nozomu Ikeda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1998, Appl. No. 143,386

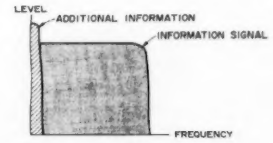
Claims priority, application Japan, Sep. 1, 1997, 09-235786; Sep. 2, 1997, 09-237276

Int. Cl. H04L *27/30*

U.S. Cl. 375—137 **12 Claims**



SPECTRUM OF INFORMATION SIGNAL ON WHICH SS ADDITIONAL INFORMATION IS SUPERIMPOSED



SIGNAL SPECTRUM AFTER INVERSE SPECTRUM SPREAD ON A RECORDING APPARATUS SIDE

1. A method for detecting an additional information signal from an input signal formed by superimposing said additional information signal on a main information signal comprising the steps of:

generating a code identical with a code used for superimposing said additional information signal;

restraining a change in a level of said main information signal included in said input signal to produce a level restrained signal so that a correlation between said main information signal and said code is reduced, thereby improving the detection of said additional information signal; and

detecting said additional information signal from said level restrained signal using said generated code, wherein said input signal is sliced and a signal at a predetermined level or lower is fetched from said input signal for generating said level restrained signal.

US 6,341,142 B2

SERIAL DATA TRANSCEIVER INCLUDING ELEMENTS WHICH FACILITATE FUNCTIONAL TESTING REQUIRING ACCESS TO ONLY THE SERIAL DATA PORTS, AND AN ASSOCIATED TEST METHOD

Francois Ducaroir, Santa Clara; Karl S. Nakamura, Palo Alto, and Michael O. Jenkins, San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Dec. 16, 1997, Appl. No. 991,715

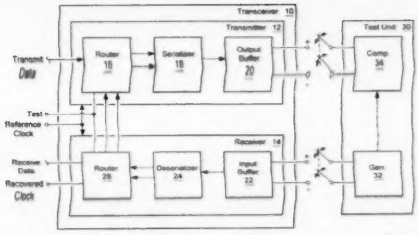
Int. Cl. H04L *5/16;* **H04B** *3/46*

U.S. Cl. 375—219 **11 Claims**

1. A serial data transceiver formed upon a monolithic semiconductor substrate, comprising:

a receiver adapted to operably receive a first serial data stream, to convert the first serial data stream into parallel data, and to produce the parallel data; and

a transmitter coupled to receive the parallel data produced by the receiver during a time in which a test signal is asserted into the transceiver, whereupon the transmitter converts the paral-



lel data produced by the receiver into a second serial data stream.

US 6,341,143 B1

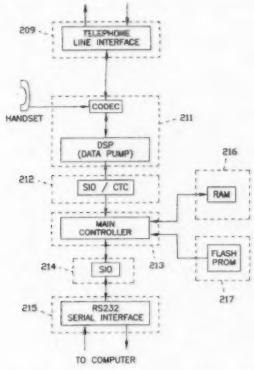
MODEM WITH FIRMWARE UPGRADE FEATURE

Craig A. Nelson, St. Paul; Harinarayana Arimilli, Coon Rapids, and Richard David Johnson, Maplewood, all of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.

Continuation-in-part of application No. 08/087,164, filed on Jul. 2, 1993. This application Jan. 3, 1995, Appl. No. 368,291.

Int. Cl. **H04B** *1/38;* **H04M** *11/00*

U.S. Cl. 375—222 8 Claims



1. A system for updating operating code in a reprogrammble modem, comprising:

a field-upgradable modem having:

telephone line interface means for connection to a telephone line;

control means connected to the telephone line interface means, for executing existing operating code to control the modem;

memory means connected to the control means for storing the existing operating code and for storing a boot program; and

the control means further operable for executing the boot program to receive updated operating code packets from a remote computer over the telephone line, for checking the validity of the packets before replacing the existing operating code in the memory means with the updated operating code, executed upon a receipt of an upgrade command from the remote computer;

the modem executing software to communicate with the remote computer connected to the telephone line; and

the remote computer further executing software to communicate with the modem to place the updated operating code into updated operating code packets and to control transfer of said updated operating code packets from the remote computer to the modem over the telephone line.

US 6,341,144 B1

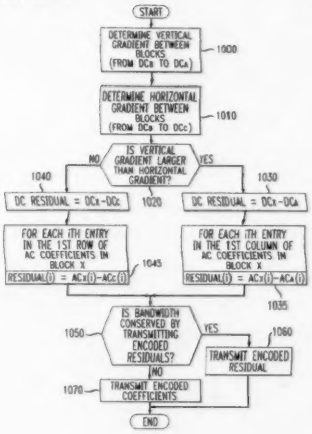
VIDEO CODER PROVIDING IMPLICIT COEFFICIENT PREDICTION AND SCAN ADAPTATION FOR IMAGE CODING AND INTRA CODING OF VIDEO

Barin Geoffry Haskell, Tinton Falls, N.J.; Atul Puri, Riverdale, N.Y., and Robert Louis Schmidt, Howell, N.J., assignors to AT&T Corp., New York, N.Y.

Provisional application No. 60/038,019, filed on Feb. 14, 1997, Provisional application No. 60/026,963, filed on Sep. 20, 1996. This application Aug. 11, 1997, Appl. No. 908,044.

***Int. Cl. H04N** 7/30*

U.S. Cl. 375—240.2 38 Claims



1. A method of decoding coded signals of a block of new image data, comprising the steps of:

identifying a first block of image data vertically adjacent to the block of new image data, a second block of image data horizontally adjacent to the first block and a third block of image data horizontally adjacent to the block of new image data, and vertically adjacent to the second block;

determining a horizontal gradient between the first block and the second block;

determining a vertical gradient between the third block and the second block;

predicting image data for the block of new image data based on the horizontal and vertical gradients, wherein the predicting step further comprises the steps of:

in the event that the vertical gradient is less than the horizontal gradient, predicting the image data for the block of new image data based on the image data of the first block, and

in the event that the horizontal gradient is less then the vertical gradient, predicting the image data for the block of new image data based on the image data of the third block;

identifying a residual image signal from a coded signal;

generating an image signal for the block of new image data from the predicted image data and the residual image signal; and

scanning the coded signals, preliminary to the prediction step, wherein

in the event that the vertical gradient is less than the horizontal gradient,

the scanning proceeds in a horizontal-diagonal direction, and

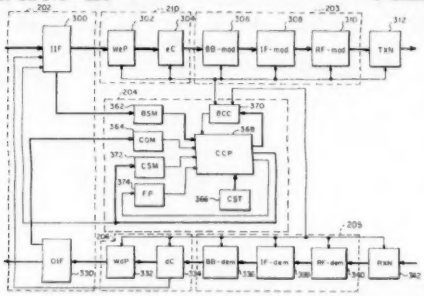
in the event that the horizontal gradient is less than the vertical gradient,

the scanning proceeds in a vertical-diagonal direction.

US 6,341,145 B1
COMMUNICATION METHOD FOR BROADBAND DIGITAL RADIO SYSTEM AND BROADBAND DIGITAL RADIO COMMUNICATION TERMINAL

Willy Hioe, Kokubunji, and Toshikazu Nishino, Kawasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 13, 1998, Appl. No. 41,771
Claims priority, application Japan, Mar. 13, 1997, 9-058792
Int. Cl. H04L *27/00*
U.S. Cl. 375—256 **5 Claims**



1. A communication method for setting a transmission condition in a broadband radio communication system which conducts communication between first and second radio communication terminals on a plurality of narrowband channels obtained by dividing a broadband channel, said communication method comprising the steps of:

setting a transmission condition of at least Dart of said narrowband channels in the first radio communication terminal;

transmitting a wireless communication from the first radio communication terminal to the second radio communication terminal on the at least part of the narrowband channels for which the transmission condition has been set;

measuring in said second radio communication terminal a line guality of each narrowband channel of the at least part of the narrowband channels upon receipt of said wireless communication from said first radio communication terminal;

transmitting line quality information indicating the line quality of each narrowband channel of the at least part of the narrowband channels from said second radio communication terminal to said first radio communication terminal; and

causing said setting step to be performed using a new transmission condition for each narrowband channel of the at least part of the narrowband channels based on said line quality information received from said second radio communication terminal,

wherein said transmitting a wireless communication step comprises the step of:

transmitting a test signal from said first radio communication terminal to said second radio communication terminal on another part of the narrowband channels other than the at least part of the narrowband channels, and

wherein said measuring step comprises the step of:

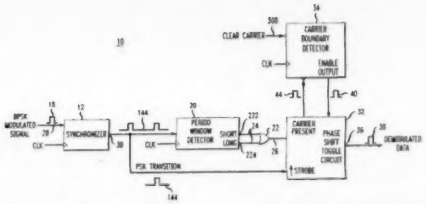
determining an error rate of each narrowband channel of the at least part of the narrowband channels based on an error rate in said test signal received from said first radio communication terminal.

US 6,341,146 B1
PHASE-SHIFT-KEYING DEMODULATOR AND DEMODULATION METHOD USING A PERIOD-WIDTH WINDOWING TECHNIQUE

Robert E. Johnson, Randolph, and George P. Vella-Coleiro, Summit, both of N.J., assignors to Lucnet Technologies Inc., Murray Hill, N.J.

Filed Oct. 29, 1998, Appl. No. 181,810
Int. Cl. H03D *3/18*; **H04L** *27/221*
U.S. Cl. 375—329 **25 Claims**

18. A field programmable gate array demodulator for demodulating a phase-shift keyed signal containing a message, the demodulator comprising:



a synchronizer for accepting a phase-shift keyed modulated signal and for outputting a transition signal, the transition signal including a series of pulses generated in response to reference edges of the phase-shift keyed modulated signal;

a period-window detector coupled to the synchronizer for receiving the transition signal, the period window detector measuring the time interval between successive ones of the pulses generated, the period-window detector having a plurality of outputs indicative of a potential phase shift in the phase-shift keyed modulated signal based upon the measured time interval;

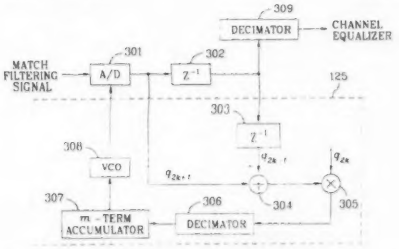
a phase shift toggle circuit providing a demodulated data output, the phase shift toggle circuit adapted to receive the transition signal from the synchronizer and adapted to change the demodulated data output from a first state to a second state if the time interval falls within a predetermined window period for a predetermined fixed duration; and

a carrier boundary detector for detecting a beginning and an end of the message and providing an output for disabling the demodulated data output after a trailing unmodulated carrier signal following the end is detected.

US 6,341,147 B1
MAXIMUM LIKELIHOOD SYMBOL TIMING ESTIMATOR

Sang Soo Oak, Daegu; Woo Jin Song, Pohang, and Kwang Chun Lee, Gumi, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 8, 1999, Appl. No. 414,777
Claims priority, application Rep. of Korea, Oct. 9, 1998, 98-42273; Jun. 1, 1999, 99-20053
Int. Cl. H03D *1/00*
U.S. Cl. 375—341 **16 Claims**



1. In a digital communication system having a symbol timing recovering unit for periodically sampling a receiving signal and recovering the same, a maximum likelihood symbol timing recovering unit, comprising:

a sampler for over-sampling a matched filtering signal;

first and second delay units for sequentially delaying a sampling signal of the sampler;

an adder for adding an output of the sampler and an output of the second delay unit;

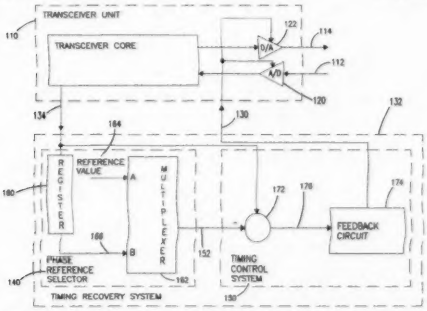
a multiplier for multiplying a decision symbol a_k received in a preamble format and an output signal of the adder;

a first decimeter for outputting a certain interval value based on a decision sample position among the output of the multiplier;

an accumulator for accumulating the output of the second decimeter at a certain interval; and

a voltage adjusting oscillator for providing an oscillation frequency generated using the output of the accumulator as an adjusting voltage to a 2Fs sampling clock signal of the sampler.

US 6,341,148 B1
METHOD AND APPARATUS FOR MINIMIZING TRANSIENT SAMPLING FLUCTUATIONS UPON TRANSITION BETWEEN MODES OF COMMUNICATION
James Ward Girardeau, Jr., Sacramento, Calif., assignor to Level One Communications, Inc., Sacramento, Calif.
Filed Nov. 4, 1998, Appl. No. 185,889
Int. Cl. H04L *7/00*
U.S. Cl. 375—355 **11 Claims**



10. A method of minimizing transient fluctuation of sampling rates for a transceiver, which result from a transition between communication modes, comprising:

maintaining, until expiration of an adaptation period, the sampling frequency prevailing just prior to transition between communication modes; and

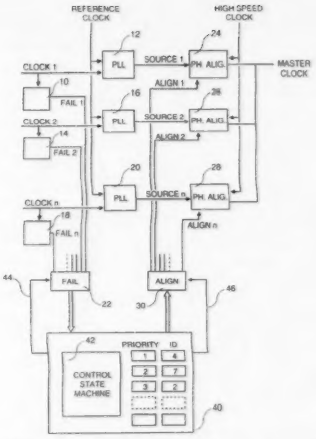
upon expiration of the adaptation period, continuously adjusting the sampling frequency so as to minimize the difference between present phase information and phase information from a time preceding expiration of the adaptation period.

US 6,341,149 B1
CLOCK CONTROL DEVICE FOR A NON-DISRUPTIVE BACKUP CLOCK SWITCHING
Lucien Bertacchini, Nice; Michel Chicherio; Jacques Fieschi, both of St. Laurent Du Var, and Jean-Francois Le Pennec, Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 22, 1998, Appl. No. 83,925
Claims priority, application European Pat. Off., Jun. 27, 1997, 97480022
Int. Cl. H04L *7/00*
U.S. Cl. 375—356 **8 Claims**

1. A clock control system for use in a switching node of a network connected to other network nodes and to data terminal equipments by a number of connection lines, the node including an internal reference clock of a low level stratum and receiving a plurality of high level stratum clocks over a plurality of said connection lines, one of said high level stratum clocks being used to generate a master clock for the node, said clock control system being used to select another one of said plurality of high level stratum clocks when the clock currently used to generate the master clock fails and including for each one of said plurality of high level stratum clocks:

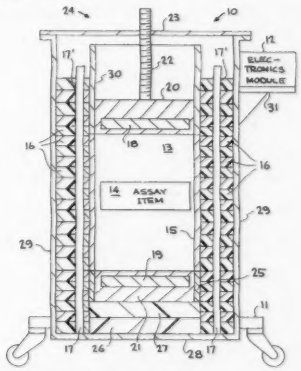
a phase locked loop circuit for phase locking the internal reference clock to the selected clock and obtaining a plurality of phase locked (PLL) reference clocks; and

phase alignment logic circuits associated with each of said PLL reference clocks for continuously aligning the phase of each of said PLL reference clocks to the phase of said master clock



if the PLL reference clock is not the one currently used to generate said master clock, whereby said master clock continues to be generated without loss of data if the clock currently used to generate said master clock happens to fail.

US 6,341,150 B1
FISSILE MATERIAL DETECTOR
Alexander I. Ivanov; Vladislav I. Lushchikov; Eugeny P. Shabalin; Nikita G. Maznyy; Michael M. Khvastunov, all of Dubna, Russian Federation, and Mark Rowland, Alamo, Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Jun. 30, 2000, Appl. No. 608,778
Int. Cl. G21G *4/02*
U.S. Cl. 376—159 **20 Claims**



1. A fissile material detector including:

a sample cavity located within a cylinder of neutron moderator material,

a pair of endcaps located within said cylinder defining ends of said sample cavity,

at least one of said endcaps being movable,

a pair of spatially extended shaped neutron sources mounted in said pair of endcaps,

a plurality of neutron counters being located in said neutron moderator material,

said sample cavity having a thermal neutron filter insert having reflector properties about side walls thereof, and

an electronics module operatively connected to said plurality of neutron counters.

US 6,341,151 B1
PREVENTIVE MAINTENANCE METHOD AND APPARATUS OF A STRUCTURAL MEMBER IN A REACTOR PRESSURE VESSEL

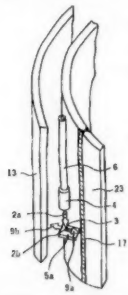
Kunio Enomoto, Tokai-mura; Katsuhiko Hirano, Hitachi; Eisaku Hayashi, Hitachi; Ren Morinaka, Hitachi; Sadato Shimizu, Hitachinaka; Satoshi Kanno, Hitachi; Shigeru Tanaka, Tokai-mura, and Tetsuya Ishikawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi Engineering Co., Ltd., and Hitachi Ibaraki Business Engineering Co., Ltd., both of Ibaraki, all of Japan

Division of application No. 09/373,213, filed on Aug. 12, 1999. This application Aug. 29, 2000, Appl. No. 649,988.

Claims priority, application Japan, Aug. 12, 1998, 10-227838; Aug. 10, 1999, 11-225953

Int. Cl. G21C *17/00*

U.S. Cl. 376—305 **11 Claims**



1. A preventive maintenance apparatus of a structural member in a reactor pressure vessel for reducing a tensile residual stress on a surface thereof, comprising:

a nozzle for discharging a water jet into core water in a reactor pressure vessel;

a deflector having a plane surface which is impinged by said water jet to change direction of flow of said water jet discharged from the nozzle and impinge the water jet after being deflected onto the surface of the structural member to be treated; and

a support maintaining a predetermined distance between the nozzle and the plane surface of the deflector.

US 6,341,152 B1
X-RAY COMPUTERIZED TOMOGRAPHY APPARATUS

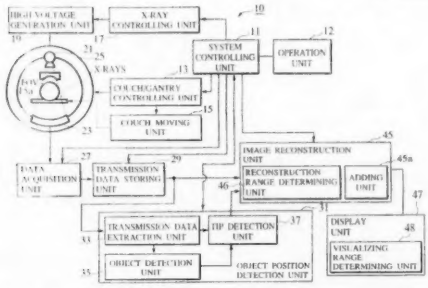
Naoki Sugihara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 10, 1999, Appl. No. 393,270

Claims priority, application Japan, Oct. 2, 1998, 10-281622

Int. Cl. G21K *5/08*

U.S. Cl. 378—4 **47 Claims**



1. An X-ray computerized tomography apparatus comprising:

an X-ray detection unit for detecting transmission X-rays from a plurality of directions irradiated from an X-ray beam generation source and transmitted through a subject;

a data acquisition unit for acquiring transmission data according to the transmission X-rays detected by the X-ray detection unit:

an object position detection unit for detecting a position of an object inside the subject, according to a part of the transmission data acquired by the data acquisition unit;

a reconstructing range determining unit for determining a slice to be Image-reconstructed, according to the position detected by the object position detection unit; and

an image reconstruction unit for reconstructing a tomographic image of a slice in which the object exists, according to transmission data acquired by the data acquisition unit, the transmission data being acquired in the slice determined by the reconstruction range determining unit.

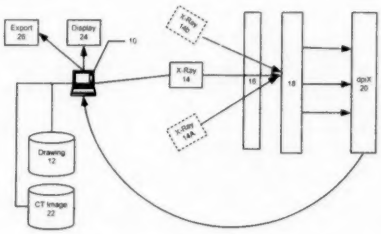
US 6,341,153 B1
SYSTEM AND METHOD FOR PORTABLE NONDESTRUCTIVE EXAMINATION WITH REALTIME THREE-DIMENSIONAL TOMOGRAPHY

Charles Rivera, Annapolis, and Robert A. Rashford, Darnascus, both of Md., assignors to Genesis Engineering Company, Lanham, Md.

Filed Oct. 27, 2000, Appl. No. 698,463

Int. Cl. G01N *23/083*

U.S. Cl. 378—4 **4 Claims**



1. A system for portable non-destructive examination comprising:

a portable processor comprising CAD/CAM program, the CAD/CAM program rendering drawings in an associated coordinate space, the processor further comprising instructions for creating three dimensional images from a plurality of x-ray images;

an x-ray source for creating x-rays connected to the processor for irradiating a target;

a scintillator screen for receiving the x-rays that pass through the target and for generating photons;

a silicon sensor array connected to the processor for receiving the photons, for generating a x-ray images of the target, and for transmitting the x-ray images of the target to the processor; and

the processor further comprising instructions rendering the three dimensional image into the coordinate system of the CAD/CAM program.

US 6,341,154 B1
METHODS AND APPARATUS FOR FAST CT IMAGING HELICAL WEIGHTING

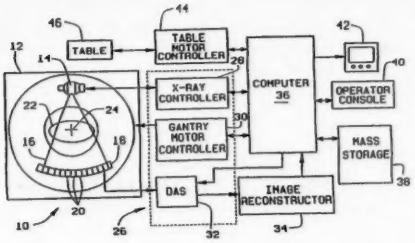
Guy M. Besson, Wauwatosa, Wis., assignor to GE Medical Systems Global Technology Company, LLC, Waukesha, Wis.

Filed Jun. 22, 2000, Appl. No. 602,153

Int. Cl. A61B *6/03*

U.S. Cl. 378—15 **22 Claims**

1. A method for reconstructing a computed tomographic image of an object comprising the steps of:



selecting an operating mode of a CT imaging system;

helically scanning an object with a multislice CT imaging system in accordance with the selected operating mode to collect projection data;

identifying a center view of the collected projection data for an image plane to be reconstricted;

using the identified center view to select an angular range of super-views of the collected projection data that contribute to a reconstriction of an image of a desired region of the object;

weighting selected rows or views in the selected angular range of super-views using helical weights to generate synthesized views of the object in the plane of reconstriction;

weighting the synthesized views with scan weights; and

backprojecting the weighted synthesized views to produce a reconstructed image of the desired region of the object.

US 6,341,155 B1

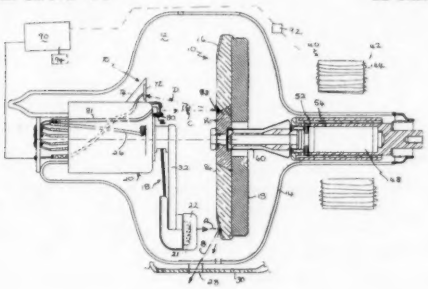
PULSE DETECTION SYSTEM FOR X-RAY TUBES

Daniel E. Kuzniar, Lyons, and Jason P. Harris, Sr., Aurora, both of Ill., assignors to Marconi Medical Systems, Inc., Highland Heights, Ohio

Filed Mar. 8, 2000, Appl. No. 520,554

Int. Cl. H05G *1/22*

U.S. Cl. 378—94 **22 Claims**



1. A detection system for detecting the rotational speed of an anode of an x-ray tube, the x-ray tube including a first source of electrons which are accelerated at a target area of an anode to generate a primary x-ray beam, the detection system comprising:

a second source of electrons which are accelerated at the anode to generate a second x-ray beam;

a defect on the anode which periodically changes an x-ray distribution of the second x-ray beam at least along a detection direction; and

an x-ray detector which detects an intensity of the second x-ray beam along the detection direction.

US 6,341,156 B1

X-RAY DIAGNOSTIC APPARATUS WITH RELATIVELY MOVED X-RAY SOURCE AND DETECTOR

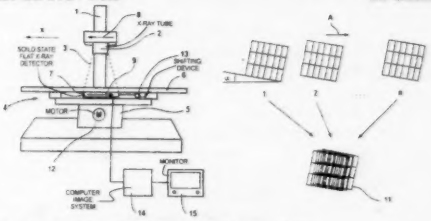
Lothar Baetz, Heroldsberg; Wolfgang Haerer, Litzendorf, and Thomas Mertelmeier, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 11, 2000, Appl. No. 568,545

Claims priority, application Germany, May 14, 1999, 199 22 346

Int. Cl. A61B *6/03*; **H05G** *1/64*

U.S. Cl. 378—98.8 **10 Claims**



1. An x-ray diagnostic apparatus comprising:

positioning table adapted to receive a subject;

an x-ray source, which emits an x-ray beam, disposed at a first side of said positioning table;

a digital x-ray detector disposed on a second side of said positioning table, opposite said first side, so that said x-ray beam, after penetrating a subject, is incident on said digital x-ray detector, said digital x-ray detector comprising a plurality of imaging elements disposed in a matrix which emit output signals dependent on x-rays incident thereon;

a device for producing relative movement between said x-ray source and said digital x-ray detector along a movement direction;

a computerized imaging system supplied with said output signals from said digital x-ray detector for producing a plurality of digital images therefrom, and for superimposing said digital images to produce a superimposed image wherein details only within a specified longitudinal slice of said subject are sharply imaged; and

said x-ray detector being rotated at an angle relative to said movement direction.

US 6,341,157 B1

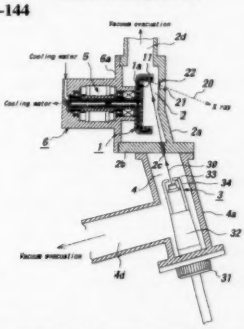
ROTATION ANTICATHODE-X RAY GENERATING EQUIPMENT

Noriyoshi Sakabe, 3-101, Tsukuba-Kasuga-Danchi, 37, Kasuga 2-Chome, Tsukuba City, Ibaragi Pref., Japan

Filed May 31, 2000, Appl. No. 584,090

Int. Cl. H01J *35/10*

U.S. Cl. 378—144 **17 Claims**



1. A rotation anticathode-X ray generating equipment comprising a rotation anticathode and a cathode, wherein the electron beam for the anticathode from the cathode is irradiated to the area of the surface of the anticathode on which a centrifugal force acts

toward the inner side of the anticathode from the outer side thereof when the anticathode rotates, and thereby, a X ray is generated.

US 6,341,158 B1

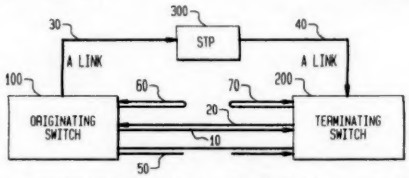
TELEPHONY TEST TECHNIQUE

Martin Corso, III, Aurora; Nicholas D. De Trana, Addison; Craig L. DeCaluwe, Naperville, and Robert G. Demmert, St. Charles, all of Ill., assignors to AT&T Corporation, New York, N.Y.

Filed Nov. 7, 1997, Appl. No. 966,285

Int. Cl. H04M *1/24;3/08;3/22*

U.S. Cl. 379—6 **21 Claims**



1. A method of testing for a loopback condition in a facility, comprising the steps of:

generating a test tone,

placing the test tone on a forward trunk associated with the facility,

monitoring a return trunk associated with the facility to detect the test tone, and if any test tone is detected in the return trunk, disabling the facility.

US 6,341,159 B1

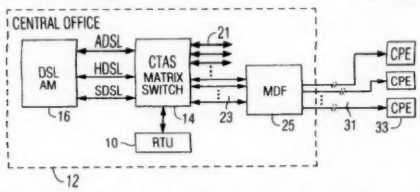
EXTRAPOLATION OF LOCATION AND AMPLITUDE OF NOISE SOURCES ON TELECOMMUNICATION WIRELINE FROM ENDED ACCESS POINT

James M. Jollota, Simi Valley, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 18, 2000, Appl. No. 507,074

Int. Cl. H04M *1/24;* **G01R** *31/08*

U.S. Cl. 379—22.03 **15 Claims**



1. A method of identifying the location and amplitude of a source of noise along a wireline telecommunication link comprising the steps of:

(a) conducting electrical measurements from a single access location in a telecommunication facility to said wireline telecommunication link, that include measuring noise on said wireline telecommunication link at each cross-connect point of a switch, and a measurement from which attenuation along and length of said wireline telecommunication link may be determined; and

(b) processing measurement values obtained in step (a) to determine the location of said source of noise and the amplitude of the noise at said location of said wireline telecommunication link by storing measured noise values associated with each cross-connect point of a switch, averaging noise values for any unterminated cross points to derive a noise balance representative of noise attributable to a central office, determining wireline length and loss per unit length based on capacitance measurements, determining a noise difference value that is attributable only to a noise source at a cable drop source and determining the noise amplitude and its location from the wire length, loss per unit length and noise difference values.

US 6,341,160 B2

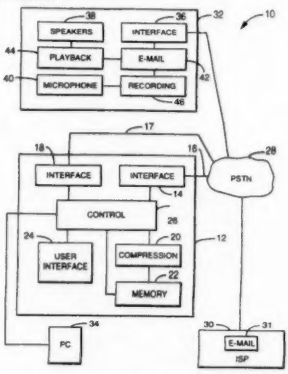
ANSWERING MACHINE FOR TRANSMITTING MESSAGES TO REMOTELY ACCESSIBLE USER ACCOUNT

Boris S. Tverskoy, 351 Edlee Ave., Palo Alto, Calif. 94306, and Vladimir A. Gurevich, 5065 Shalimar Cir., Fremont, Calif. 94555

Filed Apr. 14, 1998, Appl. No. 60,516

Int. Cl. H04M *11/00;1/64*

U.S. Cl. 379—88.13 **16 Claims**



1. An answering machine comprising:

a telephone line interface coupled to a first telephone line and operable to detect an incoming call on the first telephone line;

a computer-telephone interface coupled to a second telephone line, the computer-telephone interface being collocated with the telephone line interface;

a memory operable to store digital data, the memory being collocated with the telephone line interface;

a voice signal processing system operable to process a voice signal and generate voice signal data, and operable to store the voice signal data in the memory, the voice signal processing system being collocated with the telephone line interface; and

a control system in communication with and collocated with the telephone line interface, the computer-telephone interface, the memory and the voice signal processing system, the control system being operable to receive a notification of the incoming call from the telephone line interface, and operable to cause the telephone line to create an off-hook condition on the first telephone line in response to the incoming call, and operable to retrieve an announcement from the memory, and operable to play the announcement on the first telephone line in response to the incoming call, and operable to cause the voice signal processing system to process a voice message during the incoming call and store the voice message in the memory, and operable to cause the computer-telephone interface to access an electronic mail account, and operable to generate an electronic mail message including the voice message stored in the memory at the electronic mail account, the control system being further operable to receive a command message from the user account and to execute the command message.

US 6,341,161 B1

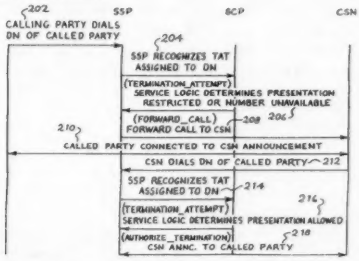
METHOD AND SYSTEM FOR PROVIDING ENHANCED CALLER IDENTIFICATION INFORMATION INCLUDING TAILORED ANNOUNCEMENTS

Teresa Farias Latter, 21190 Valley Dr., Kildeer; John Wesley Moss, 505 Red Bridge Rd., Lake Zurich, both of Ill. 60047, and Thomas Joseph McBlain, 1954 N. Charter Point Dr., Arlington Heights, Ill. 60004-7239

Continuation-in-part of application No. 09/253,339, filed on Feb. 19, 1999, now Pat. No. 6,160,876, which is a continuation-in-part of application No. 09/122,484, filed on Jul. 24, 1998. This application Aug. 3, 1999, Appl. No. 366,393.

Int. Cl. H04M *1/56;15/06*

U.S. Cl. 379—142.01 **8 Claims**



5. A system for processing a call from a calling party at a calling communication station to a called party at a called communication station, the system comprising:

a service control point (SCP) operative to determine whether standard caller identification information for the calling communication station can be provided to the called communication station and whether the called party has indicated a customer selected message should be played to the calling party, and to transmit a forward call message which includes an identifier for the called communication station, a presentation indicator and a parameter indicating the customer selected request message;

a service switching point (SSP) coupled with the SCP to receive the forward call message and to initiate a new call; and

a service node coupled with the SSP to complete the new call to the calling communication station to transmit a standard request for audible caller identification information to the calling communication station, the standard request using the customer selected request message.

US 6,341,162 B1

TELECOMMUNICATIONS INTELLIGENT NETWORK

Bryce B Kelly, Ipswich, United Kingdom, and Darren Richard Kaye, Amsterdam, Netherlands, assignors to British Telecommunications public limited company, London, United Kingdom

PCT No. PCT/GB97/02439, § 371 Date Mar. 11, 1998, § 102(e) Date Mar. 11, 1998, PCT Pub. No. WO98/11738, PCT Pub. Date Mar. 19, 1998

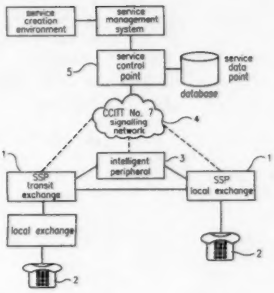
PCT Filed Sep. 11, 1997, Appl. No. 43,059

Claims priority, application European Pat. Off., Sep. 16, 1996, 96306689

Int. Cl. H04M *7/00*

U.S. Cl. 379—221.09 **18 Claims**

1. A method of operating a telecommunications intelligent network, said method comprising:



switching telecommunications services at a service switching point (SSP) remote from a service control point (SCP); and

performing detection point processing for a call switched by the SSP at the SCP remote from the SSP.

US 6,341,163 B1

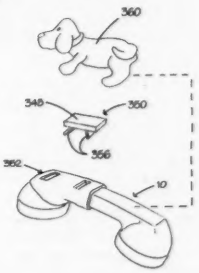
UNIQUE PHONE ACCESSORY SYSTEM

Jeffrey G. Castle, Fairfield, and Barry Z. Morgan, Stamford, both of Conn., assignors to Castle Creations, LLC, Fairfield, Conn.

Filed Feb. 15, 2000, Appl. No. 505,014

Int. Cl. H04M *1/00*

U.S. Cl. 379—449 **8 Claims**



1. An accessory for enhancing aesthetics and functionality of a telephone handset comprising:

an elongated securement member for detachably mounting to the telephone handset, said elongated securement member including a first loop extending from a first end, a second loop extending from a second end, and opposing L-shaped side walls intermediate the first and second loops;

an elongated attachment body for detachably engaging the elongated securement member, said elongated attachment body including deflectable arms on one end, protruding ears on another end and a decorative member extending therefrom;

wherein, in use, the first and second loops are coupled around opposing ends of the telephone handset and the deflectable arms are cammed inward to pass the elongated attachment body within the opposing L-shaped side walls until the deflectable arms extend out of the opposing L-shaped side walls and undeflect, so as to detachably secure the elongated attachment body to the securement body; and

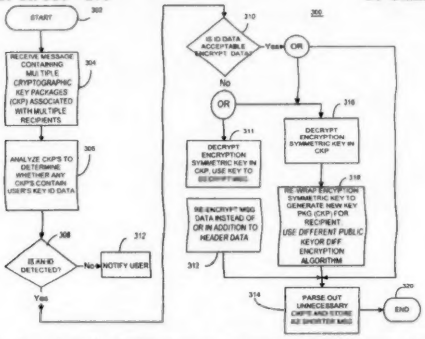
wherein said decorative member enhances the aesthetics and an ease and comfort of use of the telephone handset.

US 6,341,164 B1

METHOD AND APPARATUS FOR CORRECTING IMPROPER ENCRYPTION AND/OR FOR REDUCING MEMORY STORAGE

Lee Dilkie, and Paul C. Van Oorschot, both of Ottawa, Canada, assignors to Entrust Technologies Limited, Ottawa, Canada

Filed Jul. 22, 1998, Appl. No. 120,716
Int. Cl. H04K *9/00*
U.S. Cl. 380—278 **38 Claims**


START
RECEIVE MESSAGE CONTAINING MULTIPLE CRYPTOGRAPHIC KEY PACKAGES (CKP) ASSOCIATED WITH MULTIPLE RECIPIENTS
ANALYZE CKP'S TO DETERMINE WHETHER ANY CKP'S CONTAIN USER'S KEY ID DATA
IS AN ID DETECTED?
NOTIFY USER
IS ID DATA ACCEPTABLE (DECRYPT DATA)?
Yes
No
OR
DECRYPT ENCRYPTION SYMMETRIC KEY IN CKP, USE KEY TO DECRYPT MSG
DECRYPT ENCRYPTION SYMMETRIC KEY IN CKP
RE-ENCRYPT MSG DATA INSTEAD OF OR IN ADDITION TO HEADER DATA
RE-ENCRYPTION SYMMETRIC KEY TO GENERATE NEW KEY PKG (CKP) FOR RECIPIENT USE DIFFERENT PUBLIC KEY/OR DIFF ENCRYPTION ALGORITHM
PARSE OUT UNNECESSARY CKP'S AND STORE IN SHORTER MSG
END

1. A method for facilitating an encryption process comprising the steps of:

receiving data containing header data wherein the header data includes a plurality of cryptographic key packages associated with multiple recipients;

parsing the header data to determine whether at least one of the plurality of cryptographic key packages corresponds to key identification data for a predetermined recipient; and

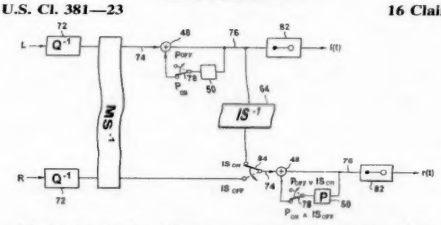
removing at least some cryptographic key packages not corresponding to the key identification data for the predetermined recipient.

US 6,341,165 B1

CODING AND DECODING OF AUDIO SIGNALS BY *USING INTENSITY STEREO AND PREDICTION* PROCESSES

Uwe Gbur, Berlin; Martin Dietz, Nürnberg; Karlheinz Brandenburg, Erlangen; Heinz Gerhauser, Waischenfeld; Jürgen Herre, Buckenhof, all of Germany, and Schuyler Quackenbush, Westfield, N.J., assignors to Fraunhofer-Gesellschaft zur Förderdung der Angewandten Forschung E.V., Munich, Germany; AT&T Laboratories/Research, Florham Park, and Lucent Technologies, Bell Laboratories, Murray Hill, both of N.J.

PCT No. PCT/EP97/02875, § 371 Date May 28, 1999, § 102(e) Date May 28, 1999, PCT Pub. No. WO98/03037, PCT Pub. Date Jan. 22, 1998
PCT Filed Jun. 3, 1997, Appl. No. 214,655
Claims priority, application Germany, Jul. 12, 1996, 196 28 293
Int. Cl. H04R *5/00*
U.S. Cl. 381—23 **16 Claims**



10. A method of decoding stereo audio spectral values which are coded partly by the intensity stereo process and partly by means of a first and a second prediction and which have side information, comprising the following steps:

ascertaining the presence of intensity stereo coding or of the first or second prediction of the stereo audio spectral values, which are grouped in scale factor bands, for each individual band on the basis of the side information;

making a prediction corresponding to the second prediction, with stereo audio spectral values coded by means of the second prediction, in one channel, in order to cancel the second prediction;

if there is intensity stereo coding in a scale factor band,

carrying out intensity stereo decoding of the intensity stereo coded stereo audio spectral values of the one channel, to form intensity stereo decoded stereo audio spectral values for the other channel;

making the prediction corresponding to the first prediction, with the intensity stereo decoded stereo audio spectral values of the other channel, the results of the prediction not being taken into account with decoded stereo audio spectral values of the other channel;

if there is no intensity stereo coding in a scale factor band,

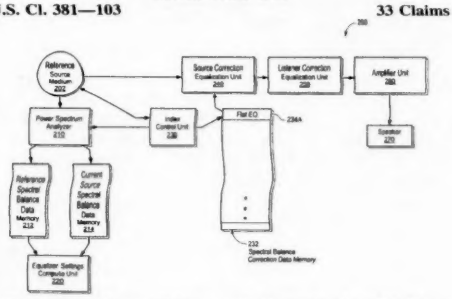
making the prediction corresponding to the first prediction, in the other channel to form the decoded stereo audio spectral values of the other channel.

US 6,341,166 B1

AUTOMATIC CORRECTION OF POWER SPECTRAL BALANCE IN AUDIO SOURCE MATERIAL

Peter L. Basel, Bolton, Mass., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Mar. 12, 1997, Appl. No. 820,370
Int. Cl. H03G *5/00*
U.S. Cl. 381—103 **33 Claims**



28. A method for equalizing an audio input signal provided from an audio source storage medium, comprising:

characterizing a spectral balance corresponding to a reference audio source storage medium, thereby establishing a reference spectral balance, wherein said reference spectral balance is user-selectable;

storing said reference spectral balance within a reference non-volatile memory location;

characterizing a spectral balance corresponding to said audio input signal, thereby establishing a current source spectral balance;

calculating a particular equalizer setting in response to comparing said reference spectral balance and said current source spectral balance;

storing said particular equalizer setting into a given memory location;

reading a parameter from said audio source storage medium;

using said parameter to index into said given memory location which stores said particular equalizer setting; and

controlling an equalizer unit in accordance with said particular equalizer setting, wherein said equalizer unit is configured to adjust the magnitude of selected frequency ranges of said audio input signal in accordance with said particular equalizer settings, thereby producing an audio output signal.

US 6,341,167 B1

SPEAKER

Masatoshi Okuyama; Masahide Sumiyama; Kazurou Okuzawa, and Mutsufumi Fujii, all of Mie, Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka, Japan

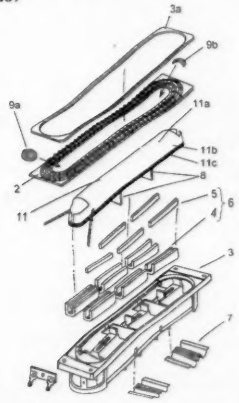
PCT No. PCT/JP99/03241, § 371 Date May 17, 2000, § 102(e) Date May 17, 2000, PCT Pub. No. WO99/66764, PCT Pub. Date Dec. 23, 1999

PCT Filed Jun. 17, 1999, Appl. No. 485,901

Claims priority, application Japan, Jun. 18, 1998, 10-71056

Int. Cl. H01R 25/00

U.S. Cl. 381—407 2 Claims



1. A speaker comprising:

a magnetic circuit containing at least a magnetic gap;

a frame connected to said magnetic circuit; and

an integral unit consisting of a voice coil bobbin unit and a diaphragm unit connected at a periphery of said frame via an edge, said integral unit being formed of said voice coil bobbin unit of a ring shape which is wound around with coil to be placed in said magnetic gap and said diaphragm unit formed in a shape of an inverse letter "U" disposed on an upper edge of said voice coil bobbin unit;

wherein said integral unit consisting of said voice coil bobbin unit and said diaphragm unit is prepared out of a sheet which was provided through a punching of a sheet into a shape of a letter "H" with a pair of extensions from both sides, forming the sheet into the shape of the inverse letter "U", and joining the extensions.

US 6,341,168 B1

METHOD AND APPARATUS FOR DETECTING AND DISPLAYING A REPRESENTATIVE IMAGE OF A SHOT OF SHORT DURATION IN A MOVING IMAGE

Akio Nagasaka, Kokubunji; Takafumi Miyatake, Hachioji; Takehiro Fujita, Kokubunji; Katsumi Taniguchi, Hachioji, and Kazuaki Tanaka, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 08/676,478, filed on Jul. 8, 1996, now Pat. No. 6,023,520. This application Apr. 6, 1999, Appl. No. 287,188.

Claims priority, application Japan, Jul. 6, 1995, 7-170672

This patent is subject to a terminal disclaimer.

Int. Cl. G06K 9/00

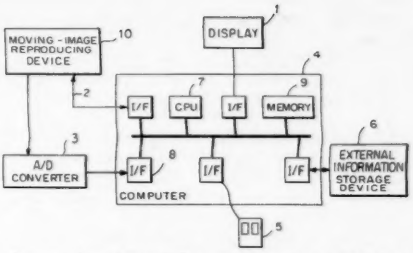
U.S. Cl. 382—107 86 Claims

1. A method of displaying a representative image corresponding to a shot of a duration within a specified range included in a plurality of shots of a moving image, said moving image includes a plurality of successive frames each having an image, and each shot includes at least one frame, said method comprising the steps of:

sequentially detecting from said moving image a plurality of shot change points representing points between a pair of frames where images of a preceding shot and images of a succeeding shot have changed;

detecting whether a duration of a shot between a preceding shot change point and a succeeding shot change point is within the specified range; and

displaying a representative image corresponding to said shot having a duration within the specified range.



US 6,341,169 B1

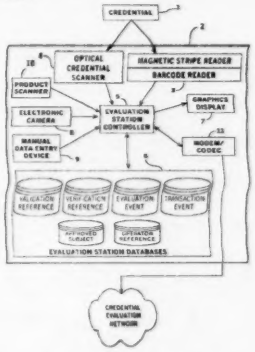
SYSTEM AND METHOD FOR EVALUATING A DOCUMENT AND CREATING A RECORD OF THE EVALUATION PROCESS AND AN ASSOCIATED TRANSACTION

Normand G. Cadorette, Jr., New York; Jonathan E. Vall, East Hampton, and Miguel R. Arcentales, Rockaway, all of N.Y., assignors to Pulse Systems, Inc., East Hampton, N.Y.

Filed Feb. 8, 1999, Appl. No. 246,261

Int. Cl. G06K 9/100

U.S. Cl. 382—115 17 Claims



1. A transaction authorization system for determining whether an individual is authorized to perform a transaction, the system comprising:

a first data acquisition means, for use in acquiring a first set of document-specific data characteristic of a document presented by an individual seeking authorization;

a second data acquisition means, for use in acquiring a first set of person-specific biometric data characteristic of an individual seeking authorization;

a first database of data records where each of said data records includes a second set of document-specific data characteristic of a unique type of valid document;

a first data processing means for determining whether the first set of document-specific data corresponds to the second set of document-specific data from any data record in the first database and therefore whether the document presented is valid;

a first set of rules for validating a presented document by determining whether the acquired first set of document-specific data corresponds to the second set of document-specific data from any record in the first database, where the first data processing means applies the first set of rules to the

acquired first set of document-specific data and to the second set of document-specific data in the data records in the first database;

a second database of data records, where each of said data records corresponds to a unique document, each record including a third set of document-specific data, a first set of person-specific biographical data and further including a second set of person-specific biometric data and where both sets of person-specific data are characteristic of the same person;

a second data processing means for selecting a data record in the second database corresponding to the first set of document-specific data;

a third data processing means for determining whether the first set of person-specific biometric data corresponds to the second set of person-specific biometric data from a data record in the second database and therefore whether the record corresponds to an individual seeking authorization;

a fourth data processing means for determining whether the first set of person-specific biographical data from a record in the second database indicates that the individual characterized by the record is eligible to perform a transaction; and

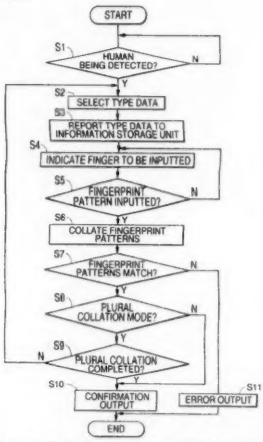
a device for indicating whether a transaction is authorized.

US 6,341,170 B2

ORGANISM COLLATION APPARATUS CAPABLE OF RANDOMLY SELECTING TYPE OR ORGANISM INFORMATION TO BE COLLATED

Yoshikazu Ikebata, and Kazunaga Yoshida, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 4, 1998, Appl. No. 128,550
Claims priority, application Japan, Aug. 4, 1997, 9-209289
Int. Cl. G06K *9/00*
U.S. Cl. 382—116 **17 Claims**



1. An organism collation method, comprising the steps of:

(a) registering a plurality of pieces of organism information, which is different among different human beings and unique to the individuals, for types determined in advance;

(b) selecting at least one type at random from the plurality of types of registered organism information;

(c) indicating inputting of first organism information of the selected type to a human being to be collated;

(d) inputting said first organism information of the human being to be collated; and

(e) first collating the first inputted organism information with the first registered organism information in accordance with the selected type and when said first inputted organism information matches the first registered organism information of the selected type, then performing the following steps;

(f) subsequent to step (d) and (e) indicating inputting of second organism information of the at least one selected type to said human being to be collated;

(g) inputting said second organism information of the human being to be collated;

(h) second collating the second inputting information with the second registered organism information in accordance with the selected type; and

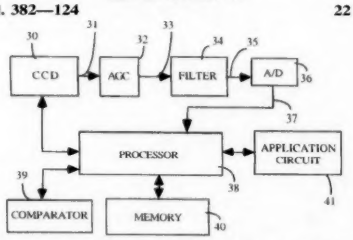
(i) verifying said individual only if at least said first and second collating steps indicate identity of said first and second inputted organism information with said first and second registered organism information respectively.

US 6,341,171 B1

METHOD AND APPARATUS FOR SCANNING AND STORING A LOW RESOLUTION OPTICAL REPRESENTATION OF A FINGER'S IMAGE

Pierre de Lanauze, 1231 rue Théorêt, Ile Bizard, Quebec, Canada, H9E 1H7

Filed Jan. 10, 1995, Appl. No. 370,979
Int. Cl. G06K *9/00*
U.S. Cl. 382—124 **22 Claims**



1. An apparatus for creating an image to uniquely identify an individual, said apparatus comprising:

a scanner arranged to scan a fingerprint side of the individual's finger to provide an image of the finger's papillary lines, said image including a plurality of gray scale regions;

a converter arranged to convert said image to an electrical signal representative of said image;

a filter arranged to filter said electrical signal so that electrical representations of the gray scale regions are filtered out of the electrical signal;

an analog-to-digital (A/D) converter arranged to convert said filtered electrical signal to digital information; and

a processor arranged to select portions of the digital information such that an entirety of the image fails to be reproducible from the selected portions.

US 6,341,172 B1

ACQUISITION SCHEME FOR AN ELECTRON PORTAL IMAGING SYSTEM

Ming Xu, San Ramon, and Zheng Chen, Pleasant Hill, both of Calif., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

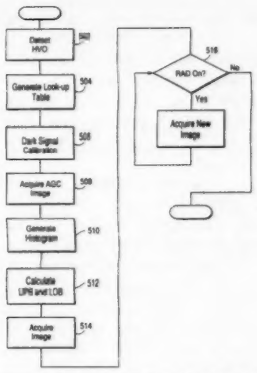
Filed Feb. 28, 1997, Appl. No. 808,600
Int. Cl. G06K *9/00*
U.S. Cl. 382—132 **39 Claims**

1. A medical imaging system, comprising:

an image detector configured to receive an image represented by a radiation beam and convert said image into a visible image;

a video detector operably coupled to said image detector and configured to receive said visible image and generate a histogram from said visible image; and

a video processing circuit configured to receive said histogram from said video detector and configured to automatically identify an upper bound and a lower bound on said visible image from examining data on said histogram while said



radiation beam is being applied, said upper bound and said lower bound defining a signal of interest; and

video capture circuitry including a lookup table configured to scale a plurality of images, said look-up table configured to be applied to one or more test images and one or more acquisition images.

US 6,341,173 B2

DEVICE AND METHOD FOR THE DETERMINATION OF DIAMETERS OF CRYSTALS

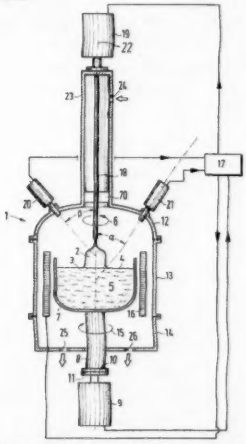
Burkhard Altekrüger, Alzenau; Joachim Aufreiter, Alzenau; Dieter Brüss, Bruchköbel, and Klaus Kalkowski, Gründau, all of Germany, assignors to Leybold Systems GmbH, Hanau, Germany

Filed Aug. 27, 1998, Appl. No. 141,322

Claims priority, application Germany, Sep. 3, 1997, 197 38 438; Apr. 21, 1998, 198 17 709

Int. Cl. G06K *9/20;9/42;9/48;9/52;9/60*

U.S. Cl. 382—141 **30 Claims**



1. A device for determining at least two diameters of a crystal that is pulled from a liquified material, comprising a plurality of two-dimensioned cameras for the reproduction of m different areas along the vertical axis of the crystal, whereby $m \geq 2$, said areas changing in diameter as the crystal is pulled, wherein at least two of said cameras have different respective image angles and fixed focuses, said image angles being aligned with the vertical axis of the crystal wherein said different image angles are selected such that each of the different areas that is reproduced fills the entire picture plane of the cameras in at least one dimension, and means for selecting a first of said two cameras for reproducing a first area, and selecting a second of said two cameras for reproducing a second area, and determining said diameter of both areas from the reproductions.

US 6,341,174 B1

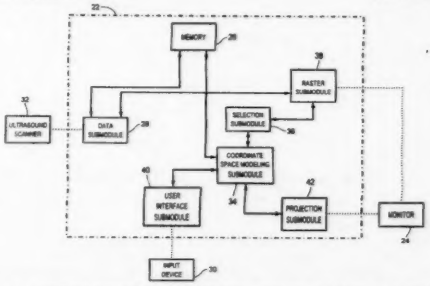
SELECTIVE RENDERING METHOD AND SYSTEM FOR RAPID 3 DIMENSIONAL IMAGING

Terrance Callahan, Aurora, and Aaron B. Boxer, Toronto, both of Canada, assignors to Dicomit Dicom Information Technologies Corp., Markham, Canada

Filed Mar. 12, 1999, Appl. No. 266,896

Int. Cl. G06K *9/62*

U.S. Cl. 382—154 **14 Claims**



1. A method for updating a display from an n^{th} view of a series of views of a three dimensional image to an $(n+1)^{th}$ view of the series of views of the three dimensional image,

the three dimensional image being generated in an image coordinate set of a coordinate space, each image coordinate in the image coordinate set having an associated image property, and the image coordinate set including, for the n^{th} view of the series of views, an associated n^{th} image coordinate subset;

the display having a display coordinate set, the display coordinate set having, for the n^{th} view of the series of views, an associated n^{th} display coordinate subset, and

the n^{th} view of the series of views being generated by projecting the associated n^{th} image coordinate subset onto the n^{th} display coordinate subset on the display so that each display coordinate in the n^{th} display coordinate subset has an associated n^{th} view-specific image coordinate projected thereon;

the $(n+1)^{th}$ view of the series of views being generated by projecting the associated $(n+1)^{th}$ image coordinate subset onto the $(n+1)^{th}$ display coordinate subset on the display so that each display coordinate in the $(n+1)^{th}$ display coordinate subset has an associated $(n+1)^{th}$ view-specific image coordinate projected thereon;

the method comprising

for each display coordinate in both the n^{th} display coordinate subset and the $(n+1)^{th}$ display coordinate subset,

determining whether the n^{th} view-specific image coordinate is the same as the $(n+1)^{th}$ view-specific image coordinate; and,

when the n^{th} view-specific image coordinate is the same as the $(n+1)^{th}$ view-specific image coordinate, retaining the projection of the n^{th} view-specific image coordinate onto such display coordinate as the projection of the $(n+1)^{th}$ view-specific image coordinate onto such display coordinate; and,

when the n^{th} view associated image coordinate is different from the $(n+1)^{th}$ view associated image coordinate, projecting the $(n+1)^{th}$ view associated image coordinate onto such display coordinate.

US 6,341,175 B1
METHOD OF CONVERTING COLOR DATA

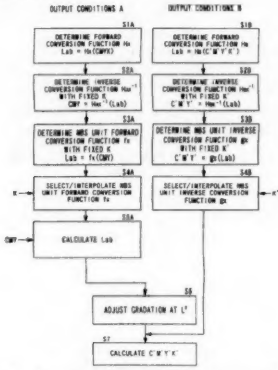
Yoshinori Usami, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-Ken, Japan

Filed Oct. 29, 1998, Appl. No. 181,666

Claims priority, application Japan, Nov. 5, 1997, 9-302859; Dec. 1, 1997, 9-330217

Int. Cl. G06K *9/00*

U.S. Cl. 382—167 **12 Claims**



1. A method of converting color data between different output conditions of a color image formed using at least four color device data, comprising the steps of:

determining a mapping from the at least four color device data under the output condition of a destination device and a source device into calorimetric values as respective forward conversion relationships for the destination device and the source device;

fixing one of said at least four colors to a predetermined value in each of said forward conversion relationships, and determining a mapping from said calorimetric values into device data of three colors of said at least four colors as inverse conversion relationships of said forward conversion relationships, for a plurality of values of said one color;

determining a relationship between a colorimetric value and device data representing a color of gray as a gray balance relationship, using the inverse conversion relationship with respect to the output conditions of the source device, and determining a mapping from said device data, in which said *gray balance relationship with respect to the output conditions* of the source device is maintained, into said colorimetric values as a gray balance preserving forward conversion relationship under the output conditions of the source device, for a plurality of values of one color of said at least four colors;

determining a relationship between a colorimetric value and device data representing a color of gray as a gray balance relationship, using the inverse conversion relationship with respect to the output conditions of the destination device, and determining a mapping from said colorimetric data, in which said gray balance relationship with respect to the output conditions of the destination device is maintained, into said device data as a gray balance preserving inverse conversion relationship under the output conditions of the destination device, for a plurality of values of one color of said at least four colors;

determining colorimetric values with respect to arbitrary device *data under output conditions of the source device from the* gray balance preserving forward conversion relationship with respect to device data of said one color of said arbitrary device data; and

determining device data under the output conditions of the destination device with respect to the colorimetric values determined from said gray balance preserving forward conversion relationship, and from the gray balance preserving inverse conversion relationship with respect to device data of said one color of said device data.

US 6,341,176 B1
METHOD AND APPARATUS FOR CHARACTER RECOGNITION

Yasuyo Shirasaki, Tokyo; Tomoko Tanabe, Kawasaki, and Chuichi Kikuchi, Ichikawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 13, 1997, Appl. No. 970,155

Claims priority, application Japan, Nov. 20, 1996, 8-308961; Sep. 10, 1997, 9-245039

Int. Cl. G06K *9/72;9/03*

U.S. Cl. 382—229 **68 Claims**

68. A character recognizing apparatus, in which reference text data to be referred to character recognition and an index file of the reference text data are provided, comprising:

recognizing means for recognizing a character image provided so as to include a single character to be recognized as one or more conversion candidate characters for the character, the one or more conversion candidate characters each being composed of text data;

producing means for producing a plurality of search character strings based on the one or more conversion candidate characters;

searching means for searching the reference text data, by using a full text search technique based on the index file of the reference text data, for each of the plurality of search character strings to provide an occurrence frequency of each of the search character strings included in the reference text data: and

determining means for determining a character most appropriate for the character image by using the occurrence frequency of *each of the search character strings.*

US 6,341,177 B1
CODE STRING EDITING APPARATUS, PICTURE CODED SIGNAL DECODING APPARATUS AND MOVING PICTURE CODED STRING DECODING APPARATUS

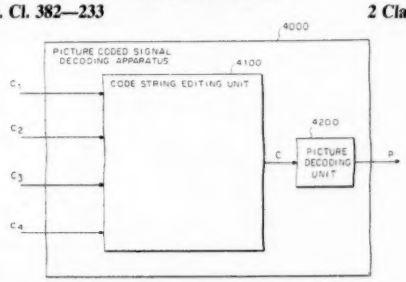
Masaaki Takizawa, Tokyo, and Satoshi Endo, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 09/010,597, filed on Jan. 22, 1998, now Pat. No. 6,181,824. This application Sep. 7, 2000, Appl. No. 657,005.

Claims priority, application Japan, Jan. 23, 1997, 9-010336

Int. Cl. G06K *9/36*

U.S. Cl. 382—233 **2 Claims**



1. A method of decoding a plurality of picture signals in encoded form, supplied by a plurality of different inputs, into one decoded picture signal which is provided as a single output, said method comprising the steps of:

detecting frame delimitation of each inputted picture signal in encoded form supplied by said different inputs;

retrieving a one by one frame from each inputted picture signal in encoded form supplied by said different inputs;

editing said one by one frame of picture signals in encoded form supplied by said different inputs into a one by one frame to generate one picture signal in encoded form; and

decoding said one picture signal in encoded form to generate one decoded picture signal which is provided as said signal output,

wherein said editing step comprises the steps of:

dropping frames which are supplied by said different inputs more than other inputs, and

generating said one picture signal in encoded form representing a composite picture including pictures corresponding to said picture signals in encoded form supplied by said different inputs.

US 6,341,178 B1

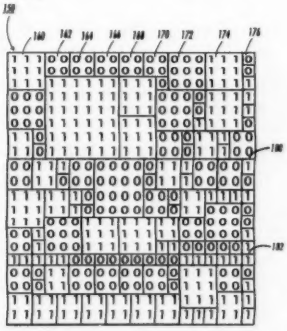
METHOD AND APPARATUS FOR LOSSLESS PRECOMPRESSION OF BINARY IMAGES

James D. Parker, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1995, Appl. No. 566,987

Int. Cl. G06K *9/36;9/46*

U.S. Cl. 382—243 **3 Claims**



1. A method, operating in an image processing system, for compressing a binary input image where the binary input image is represented as a regular array of binary image signals, comprising the steps of:

identifying an orthogonally shaped, two-dimensional region of binary image signals having the same state and a boundary encompassing the orthogonally shaped region, including the steps of:

identifying a state of a first pixel in the binary input image;

establishing a set consisting of the first pixel;

adding to the set all pixels identified by the steps comprising

(a) moving a current pixel position diagonally through the binary input image until pixels in a bounding square *defined by the first pixel position and the current pixel* position are not the same state as the first pixel; and then

(b) moving the current pixel position back diagonally such that all pixels enclosed in the bounding square are the same state as the first pixel to identify the orthogonally shaped, two dimensional region;

determining the size of the orthogonally shaped region;

encoding the state and size of the orthogonally shaped region as a digital data word;

storing the digital data word representing the encoded shape and size in compression memory; and

repeating the above steps for each of a plurality of orthogonally shaped regions of binary image signals present within the binary input image, wherein at least one of the plurality of orthogonally shaped regions is generated by non-symmetrical division of a larger image region.

US 6,341,179 B1

METHOD AND APPARATUS FOR IMAGING ARTEFACT REDUCTION

Peter N R Stoyle, Malvern; Derek L G Hill, and David Atkinson, both of London, all of United Kingdom, assignors to The Secretary of State for Defence in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Farnborough, United Kingdom

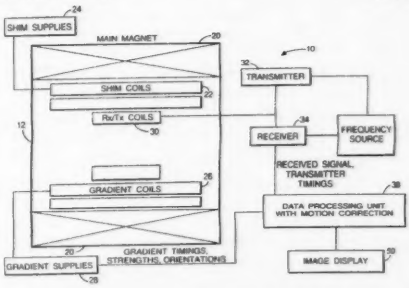
PCT No. PCT/GB97/01791, § 371 Date Nov. 17, 1998, § 102(e) Date Nov. 17, 1998, PCT Pub. No. WO98/01828, PCT Pub. Date Jan. 15, 1998

PCT Filed Jul. 3, 1997, Appl. No. 180,751

Claims priority, application United Kingdom, Jul. 9, 1996, 9614407

Int. Cl. G06T *11/00*

U.S. Cl. 382—254 **24 Claims**



1. A method for generating a corrected image of an object by:

(i) employing scanning means (**12**) to scan an object and derive an image data set from signals received from the object, and

(i) manipulating the data set to reduce unwanted artefact effects associated with the object and produce corrected image data to yield an artefact-reduced image,

characterised in that manipulating the data set incorporates the steps of:

a) providing a focus criterion for the image data set prior to correction,

b) generating a trial artefact corresponding to a possible artefact cause,

c) producing a manipulated version of the image data set in which the trial artefact is counteracted and providing a focus criterion for this version,

d) varying the trial artefact and repeating the preceding step iteratively to produce a manipulated version of the image data set compensated for a version of the trial artefact associated with optimisation of the focus criterion to the extent obtainable by iteration, and

e) producing corrected image data from a manipulated version of the image data set associated with optimisation of the focus criterion.

US 6,341,180 B1

IMAGE CONTENT AUTOFOCUS FOR MICROSCOPY USING A NOISE-INSENSITIVE FOCUS FILTER

Magnus Pettersson, Västerås, and Anders Rosenqvist, Lund, both of Sweden, assignors to Cellavision AB, Lund, Sweden

Provisional application No. 60/071,176, filed on Dec. 18, 1997.

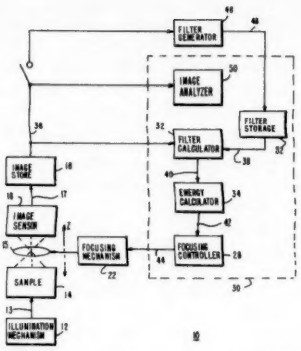
This application Dec. 16, 1998, Appl. No. 212,720.

Int. Cl. G06K *9/40*

U.S. Cl. 382—255 **15 Claims**

1. A device for determining a focus between an image sensor and an object comprising:

an image sensor for receiving an image of the object and for generating an image signal from the image, the image signal having an image component and a noise component;



a filter calculator for receiving the image signal and for generating a filtered image signal such that the noise component of the image signal has been reduced, the noise component being reduced by increasing energy contributions from parts of the image signal which contribute a relatively larger proportion to the image component than the noise component and by decreasing energy contribution from other parts of the image signal which contribute a relatively larger portion to the noise component than to the image component;

an energy calculator for receiving the filtered image signal and determining an energy level of the filtered image signal;

a controller for receiving the energy level and for generating a control signal in accordance with the energy level; and

a positioning mechanism for receiving the control signal and performing a focus adjustment based on the control signal;

wherein the filter calculator further comprises:

a linear convoluter; and

a filter selected from the group consisting of: a Wiener filter, a modified second order difference filter, and a bandpass filter.

US 6,341,181 B1

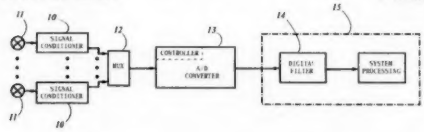
MID-SPATIAL FREQUENCY DIGITAL BOOST FILTER

John E. Greivenkamp, Jr., Tuscon, Ariz., and Andrew E. Lowman, La Crescenta, Calif., assignors to Canadian Space Agency, Saint-Hubert, Canada

Filed Aug. 7, 1998, Appl. No. 130,473

Int. Cl. H04N *7/133*

U.S. Cl. 382—260 **9 Claims**



1. A finite impulse response digital filter device for processing an input signal and improving detail components of an image signal, the device being part of a signal processing network, said device comprising:

1) digital filter means for digital filtering the input signal so as to provide a boost signal; and

2) circuit means for adding the boost signal to the input signal so as to preferentially improve the sharpness or modulation of the mid-spatial frequencies over that of the lower and higher horizontal frequencies of the image signal coming from a video sensor.

US 6,341,182 B1

METHOD AND APPARATUS FOR ANALYZING AN IMAGE

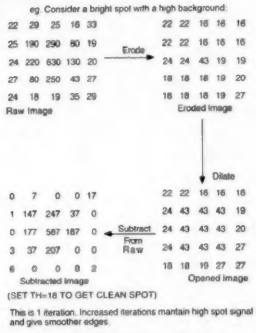
Stephen Peter Fitzgerald; Robert Ivan McConnell, and John Victor Lamont, all of Co. Antrim, United Kingdom, assignors to Randox Laboratories Ltd., Antrim, United Kingdom

Filed Aug. 21, 1998, Appl. No. 138,009

Claims priority, application European Pat. Off., Sep. 11, 1997, 97307053

Int. Cl. G06T *7/00;5/30*

U.S. Cl. 382—273 **22 Claims**


eg. Consider a bright spot with a high background:
Erode
Raw Image
Eroded Image
Dilate
Subtract From Raw
Subtracted Image
Opened Image
(SET TH=18 TO GET CLEAN SPOT)
This is 1 iteration. Increased iterations mantain high spot signal and give smoother edges.

1. A method of analyzing an image to obtain an image value, said image comprising a defined array of pixel values, said method comprising

(1) determining a highest pixel value in said image;

(2) calculating a lower threshold pixel value from said highest pixel value determined in said step (1) in accordance with a predetermined algorithm; and

(3) obtaining said image value that represents a brightness of the image by statistically analyzing said pixel values in said image which lie in a range defined by said lower threshold pixel value calculated in said step (2).

US 6,341,183 B1

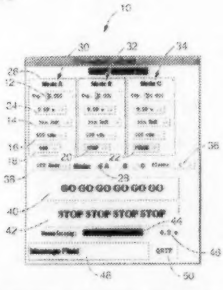
GRAPHICAL USER INTERFACE FOR IMAGE ACQUISITION AND PROCESSING

Kenneth A. Goldberg, Berkeley, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Oct. 27, 1998, Appl. No. 181,036

Int. Cl. G06K *9/36*

U.S. Cl. 382—276 **13 Claims**



1. A computer operable graphical user interface for image acquisition and processing, comprising:

(a) means for displaying a plurality of selectable graphical objects;

(b) means for controlling an image input device by selection of one or more of said graphical objects;

(c) means for displaying and manipulating an image acquired from said image input device by selection of one or more of said graphical objects;

(d) means for saving and loading a data file associated with said image by selection of one or more of said graphical objects;

(e) means for calculating and displaying the magnitude of a Fourier-transform of an image acquired from said image input device;

(f) means for computing and displaying a plot of the contrast of said acquired image;

(g) means for computing and displaying a wavefront phasemap of a sub-domain of said acquired image; and

(h) means for computing and displaying a plot of polynomials from said wavefront.

US 6,341,184 B1

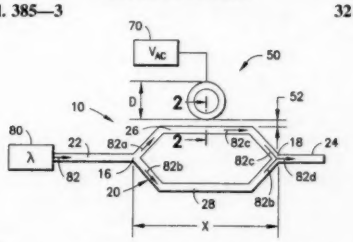
LOW DRIVE VOLTAGE OPTICAL MODULATOR

Seng-Tiong Ho, Wheeling, and Mee Koy Chin, Wilmette, both of Ill., assignors to Nannovation Technologies, Inc., Miami, Fla., and Northwestern University, Evanston, Ill.

Provisional application No. 60/153,174, filed on Sep. 10, 1999. This application Sep. 8, 2000, Appl. No. 657,397.

Int. Cl. G02B *1/035*

U.S. Cl. 385—3 **32 Claims**



1. A low drive voltage optical modulator comprising:

a Mach-Zehnder interferometer having an input waveguide, first and second arms connected to said input waveguide splitting an input optical signal having a predetermined wavelength into a first portion and a second portion, and an output waveguide connected to said first and second arms;

a resonator having a refractive index and being operatively coupled to one of said first and said second arms across a gap; and

a voltage source connected to said resonator for providing a drive voltage thereto, wherein changes in amplitude of the drive voltage cause said resonator refractive index to change;

said changes in said resonator refractive index causing a phase-shift in the first portion of the optical signal propagating in said first arm relative to the second portion of the optical signal propagating in said second arm.

US 6,341,185 B1

EXTRINSIC OPTICAL WAVEGUIDE SENSORS

Jennifer L. Elster; Richey M. Davis, and Mark E. Jones, all of Blacksburg, Va., assignors to Luna Innovations, Inc., Blacksburg, Va.

Filed Aug. 26, 1999, Appl. No. 383,722

Int. Cl. B02B *6/00*

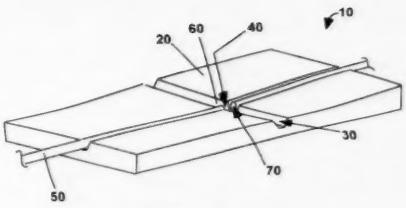
U.S. Cl. 385—12 **26 Claims**

1. An extrinsic optical waveguide sensor comprising:

a holder having at least one sample input region and at least one interferometric region;

at least one optical fiber positioned in the holder, each optical fiber having an endface serving as an input and an output; and

at least one reflector, each reflector positioned in the holder in an operable relationship to each optical fiber endface, wherein



each optical fiber endface and each reflector define each interferometric region.

US 6,341,186 B1

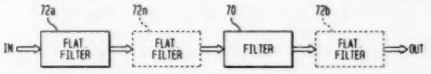
METHOD AND APPARATUS FOR THE PASSBAND FLATTENING OF DENSE WAVELENGTH DIVISION OPTICAL FILTERS

Harmeet Singh, Boca Raton, and David Kirk Lewis, Delray Beach, both of Fla., assignors to Qtera Corporation, Boca Raton, Fla.

Filed Apr. 13, 1999, Appl. No. 290,775

Int. Cl. G02B *6/293*

U.S. Cl. 385—27 **22 Claims**



1. An optical arrangement comprising:

an optical filter responsive to an input signal for generating at an output thereof one of a group consisting of a periodic and aperiodic output response waveform having a rounded pass-band shape; and

an optical flattening filter coupled in cascade with the optical filter between an input and an output of the optical arrangement for generating a response waveform having a spectral profile which is complementary to the periodic or aperiodic output response waveform of the optical filter and interacts with the response waveform of the optical filter such that each peak in a resultant response waveform at the output of the optical arrangement is substantially flattened to provide a passband which is wider than the response waveform provided by the optical filter,

wherein the optical filter comprises one of an optical multiplexer and an optical demultiplexer,

wherein the optical flattening filter is a Fabry-Perot filter comprising first and second GRIN lenses terminating first and second optical fibers, respectively, wherein the ends of the first and second GRIN lenses opposite the terminated optical fibers are separated by a cavity of a predetermined length such that the Fabry-Perot filter generates a response waveform having a spectral profile which is complementary to the response waveform of the optical filter.

US 6,341,187 B1

AUTOMATIC LIGHT-COUPLING SYSTEM FOR OPTICAL COMPONENTS

Cherng-Shiun Wu, Taichung; Ei-Kwei Li, Kaohsiung, and Chun-Mei Wu, Changhua Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

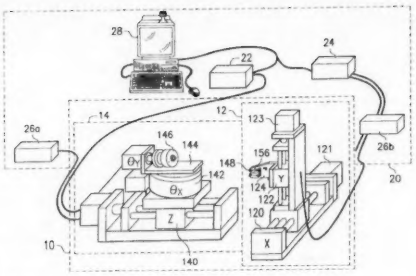
Filed Feb. 11, 2000, Appl. No. 502,160

Claims priority, application Taiwan, Jun. 15, 1999, 88109979 A

Int. Cl. G02B *6/26;6/42*

U.S. Cl. 385—52 **10 Claims**

1. An automatic light-coupling system for optical components, which is suitable for coupling and packaging an optical assembly, comprising:



a light-coupling device comprising:

a coupling media installer comprising: a horizontal table for moving a coupling media along a horizontal direction; a vertical table for moving a coupling media along a vertical direction; and a coupling media table for clipping a connector of the coupling media; and

an optical component installer comprising: a focus-control table for controlling the focusing and withdrawing of the optical components; a horizontal turntable for controlling the horizontal rotation of the optical components; a vertical turntable for controlling the vertical rotation of the optical components; an adapter of the optical component for holding the optical component, in which a pinhole is placed in front of the optical component so that the light emitted from the optical component passes through the pinhole and forms a light beam that is rotated to correct the assembly inclination of the horizontal table and the vertical table; and a withdrawing component for separating the connector from the adapter after the coupling and packaging of the optical component and the coupling media are finished; and

a coupling control device for controlling the automatic light-coupling process of the light-coupling device.

US 6,341,188 B1

METHOD AND ARRANGEMENT FOR INSTALLING OPTICAL FIBRE CABLE ELEMENTS

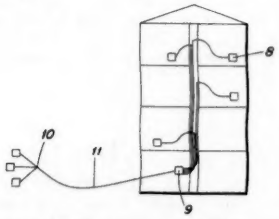
Hans Serrander, Stockholm, and Göran Bäckström, Sundbyberg, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Filed Nov. 4, 1999, Appl. No. 433,937

Claims priority, application Sweden, Nov. 5, 1998, 9803774

Int. Cl. G02B *6/44*

U.S. Cl. 385—114 **8 Claims**



1. A method of installing in a duct optical fibre cable elements, said method comprising the steps of:

combining a plurality of optical fibre ribbon cables to form an optical multi-fibre cable element; and

winding tape helically around the optical multi-fibre cable element with an overlap between successive tape turns so as to form a helical cross-surface that coacts with a flowing medium to drive the optical multi-fibre cable element forward along the duct.

US 6,341,189 B1

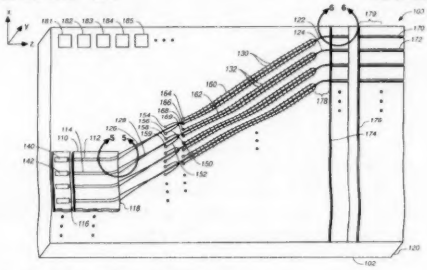
LENTICULAR STRUCTURE FOR INTEGRATED WAVEGUIDES

David A. G. Deacon, Los Altos, Calif., assignor to Sparkolor Corporation, Santa Barbara, Calif.

Filed Nov. 12, 1999, Appl. No. 438,887

Int. Cl. G02B *6/10*

U.S. Cl. 385—130 **43 Claims**



1. An optical device comprising:

a thin-film waveguide segment fabricated on a substrate, the thin-film waveguide segment having a core structure of a core material having a first index of refraction and a cladding structure, the cladding structure at least partially surrounding the core structure and having a second index of refraction lower than the first index for guiding an optical mode along an optical propagation axis,

a surface of the cladding structure, the optical propagation axis intersecting the surface of the cladding structure, and

a lenticular protrusion formed from the core material and extending from the surface of the cladding structure, the lenticular protrusion being optically coupled to the core structure for refracting the optical mode along a focal axis.

US 6,341,190 B1

ORGANIC OPTICAL COMPONENTS AND PREPARATION THEREOF

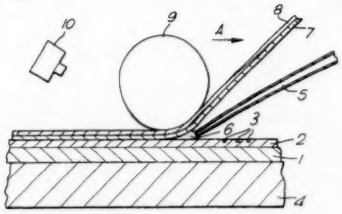
Philip Summersgill, Redcar; Thomas Harvey Grierson, Middlesbrough; Timothy George Ryan, Middlesbrough, and Neil Carter, Middlesbrough, all of United Kingdom, assignors to Epigem Limited, Cleveland, United Kingdom

Filed Nov. 16, 1999, Appl. No. 441,703

Claims priority, application United Kingdom, Oct. 1, 1993, 9320326

Int. Cl. G02B *6/10*

U.S. Cl. 385—130 **25 Claims**



1. Polymer thin film comprising at least one polymeric structure for use as an organic optical component

which thin film comprises

(a) a first layer of an optically transmissive first polymer having a first refractive index, the first layer having a surface in which is defined at least one retaining feature adapted to retain a polymer therein;

(b) a retention layer of an optically transmissive UV curable second polymer retained within the at least one retaining

feature, the second polymer having a second refractive index which is greater than the first refractive index; characterised by

(c) an overlay of the second polymer over the first layer adjacent the at least one retaining feature, the overlay having thickness in the range 0.001 μm to 1.5 μm over the surface of the first layer.

US 6,341,191 B1

VARIABLE ATTENUATION TYPE OPTICAL POWER ATTENUATOR WITH LATCHING RATCHET

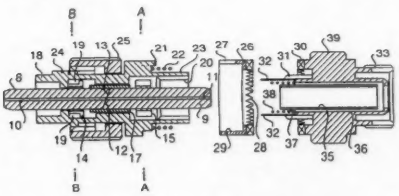
Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Matsudo, Japan

Filed Apr. 14, 1999, Appl. No. 291,067

Claims priority, application Japan, Jul. 7, 1998, 10-191771

Int. Cl. G02B *6/00*

U.S. Cl. 385—140 **13 Claims**



1. A variable attenuation type optical power attenuator, comprising:

fixed and rotatable coaxial ferrules having respective optical fibers inserted therein along an optical axis of said ferrules, adjacent opposing end surfaces of said ferrules and said optical fibers being polished to provide surfaces inclined with respect to a plane perpendicular to said optical axis;

an alignment sleeve receiving therein said fixed and rotatable ferrules, said rotatable ferrule being rotatable with respect to said fixed ferrule within said alignment sleeve;

a fixed housing receiving said alignment sleeve, said fixed housing restricting rotation of said fixed ferrule and being provided with a first threaded portion;

a rotatable housing having a first face ratchet facing said fixed housing, said rotatable housing being joined by a second threaded portion to the first threaded portion of said fixed housing for rotational and axial movements of said rotatable housing with respect to said fixed housing;

a ratchet ring having a second face ratchet for engagement with said first face ratchet, said fixed housing restricting rotation of said ratchet ring, said ratchet ring being movable axially with respect to said fixed housing while being urged by a first spring toward said rotatable housing; and

a second spring provided between said rotatable ferrule and said rotatable housing, whereby rotation of said rotatable housing changes the relative rotational angle of said rotatable ferrule with respect to said fixed housing so as to adjust the distance between the opposing ends of the optical fibers inserted in said fixed ferrule and said rotatable ferrule thereby adjusting the attenuation provided by the variable attenuator.

US 6,341,192 B1

DECODING METHOD AND DECODING PLAYER AND RECORDING MEDIUM

Yasushi Fujinami, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

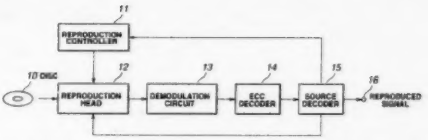
Filed Aug. 5, 1998, Appl. No. 129,590

Claims priority, application Japan, Aug. 8, 1997, 9-215213

Int. Cl. H04N *5/93*

U.S. Cl. 386—52 **10 Claims**

3. A decoding player for reading an encoded data row consisting of a succession of predetermined encoded data groups comprising



a plurality of frames and reproduction control information including information on an edit-out point and edit-in point, respectively, having been used in data edition, from a random-accessible recording medium having recorded therein at least the encoded data row and reproduction control information, and decoding the read encoded data row based on the reproduction control information, comprising:

storing means having a storage capacity for at least one of the predetermined encoded groups; and

means of controlling, based on the reproduction control information, the reading from the recording medium and the decoding of the read data, the controlling means being adapted to:

determine, based on the reproduction control information, a leading position of a first section including the edit-out point and consisting of encoded data row, before the edit-out is reached,

read and decode the encoded data row in the first section before an output time for the edit-out point reached, and stored the decoded data into the storing means,

read from the recording medium and decoded the encoding data row in a second section between the edit-out point and edit-in point while outputting the decoded data from the first section when an output time for the leading position of the first section is reached, and

read from the recording medium and decode for output of the encoded data row following the second section when an output time for the edit-in point is reached.

US 6,341,193 B1

RECORDING AND REPRODUCTION OF AN INFORMATION SIGNAL IN/FROM A TRACK ON A RECORD CARRIER

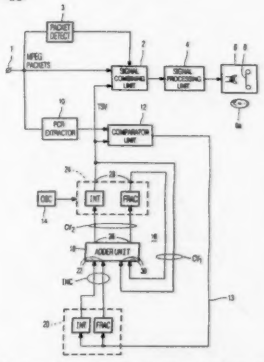
Alphonsus T. J. M. Schipper, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 4, 1999, Appl. No. 326,509

Claims priority, application European Pat. Off., Jun. 5, 1998, 98201880

Int. Cl. H04N *5/91*

U.S. Cl. 386—65 **8 Claims**



1. A recording apparatus for recording an information signal in a track on a record carrier, the information signal comprising packets that may occur irregularly as a function of time in a serial datastream of the information signal, the apparatus comprising:

input means for receiving the information signal;

time stamp generator means for generating time stamps having a relationship to the moments of occurrence of each said packets comprised in the information signal received, the time stamp generator means generating subsequent cycles of count values in response to a clock signal, the time stamp generator means further deriving each of time stamp values in response to a detection of an occurrence of each of said packets in said information signal received, said time stamp values for said packets having a relationship to the count value at said moments of occurrence of said packets, respectively;

combining means for combining said packets and the corresponding time stamp values to form a composite packet; and

writing means for writing the composite packet in said track on the record carrier, characterized in that the time stamp generator means comprises:

variable increment value determining means for generating a variable increment value in response to a control signal;

adder means for adding the variable increment value to a count value in response to the clock signal to form a subsequent count value in a cycle of count values; and

comparator means for comparing one or more program clock reference values comprised in packets in the information signal with one or more time stamp values to derive the control signal.

US 6,341,194 B1

VIDEO SIGNAL TRANSMISSION APPARATUS

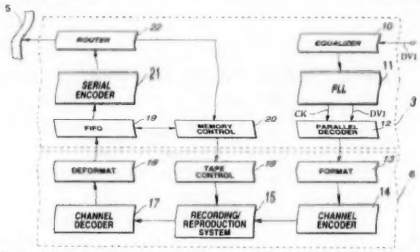
Teruyuki Yoshida, and Shosuke Tanaka, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of application No. 08/793,857, filed as application No. PCT/JP96/01822, filed on Jul. 1, 1996, now Pat. No. 6,104,859. This application Jul. 12, 2000, Appl. No. 614,637.

Claims priority, application Japan, Jun. 29, 1995, P7-184993

Int. Cl. H04N *5/76*

U.S. Cl. 386—80 **9 Claims**



1. A video signal receiving apparatus for receiving picture data inputted in predetermined block units by an asynchronous transfer mode from a transmission path and for converting the received picture data as video material into a video signal or signals for transmission in a synchronous transfer mode, the apparatus comprising:

recording/reproduction means for recording or reproducing the video material with respect to a recording medium;

memory means for receiving the video material from the transmission path by the asynchronous transfer mode and for storing the received video material; and

control means for monitoring memory speed of the video material to be stored into the memory means, and for monitoring remaining capacity of the memory means, such that when the remaining capacity of the memory means is less than a predetermined value when the video material is stored into the memory means from the transmission path, the control means outputs to the recording/reproduction means a control signal which designates recording speed of the recording/reproduction means and allows the memory means to output the video material stored therein to the recording/reproduction means in the synchronous transfer mode to record the video material.

US 6,341,195 B1

APPARATUS AND METHODS FOR A TELEVISION ON-SCREEN GUIDE

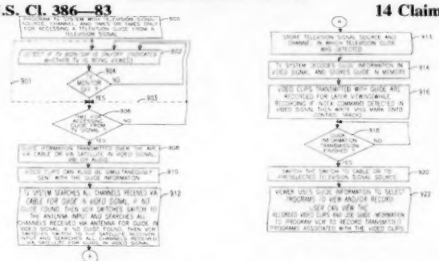
Roy J. Mankovitz, Encino, and Henry C. Yuen, Redondo Beach, both of Calif., assignors to E-Guide, Inc., Beverly Hills, Calif.

Continuation-in-part of application No. 08/368,340, filed on Dec. 30, 1994, now Pat. No. 5,659,367, which is a continuation-in-part of application No. 08/364,708, filed on Dec. 28, 1994, now Pat. No. 5,640,484. This application May 23, 1997, Appl. No. 862,199.

This patent is subject to a terminal disclaimer.

Int. Cl. H04N *5/76;5/445*

U.S. Cl. 386—83 **14 Claims**



***1**. A method for acquiring data related to television programming comprising the steps of:*

receiving from a first television signal source a television signal capable of incorporating embedded data relating to television programming;

determining if data related to television programming is embedded in the television signal from the first source;

if data related to television programming is embedded in the television signal from the first source, storing the embedded data in an electronic memory; and

if data related to television programming is not embedded in the television signal from the first source, performing the following steps:

receiving from a second signal source a television signal capable of incorporating embedded data relating to television programming;

determining if data related to television programming is embedded in the television signal from the second source; and

if data related to television programming is embedded in the television signal from the second source, storing the embedded data in the electronic memory.

US 6,341,196 B1

INFORMATION RECORDING METHOD AND INFORMATION REPRODUCING METHOD FOR COMPRESSED VIDEO INFORMATION

Hideo Ando, Tokyo, and Hiroaki Unno, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 14, 1999, Appl. No. 311,272

Claims priority, application Japan, May 15, 1998, 10-133832

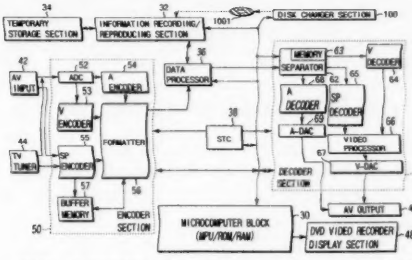
Int. Cl. H04N *5/92;5/781*

U.S. Cl. 386—95 **13 Claims**

1. An information recording method of recording data on an information recording medium, comprising the steps of:

recording a video file or audio file including an information object comprising object units including video data or audio data constituted by at least one program;

recording management information in a management file, for controlling a selection of the information object in the video file or in the audio file, said management information including object information including a plurality of object search pointer numbers, and a plurality of object information corresponding to the object search pointer numbers, the plurality of



object information including time map information designating a reproduction order of the object units, and a cell information representing a cell and referring to said time map information, the cell information including a cell type information for discriminating cell type and the object search pointer number corresponding to the cell type;

recording original program chain information designating a fixed reproduction order of the cells while keeping an original reproduction order of said object units unchanged;

recording new chain information as user-defined program chain information in the management file, the new chain information designating a reproduction order of the cells and this reproduction order of the cells is different from a fixed reproduction order designated by the original program chain information.

US 6,341,197 B1

INFORMATION RECORDING METHOD AND *INFORMATION REPRODUCING METHOD*

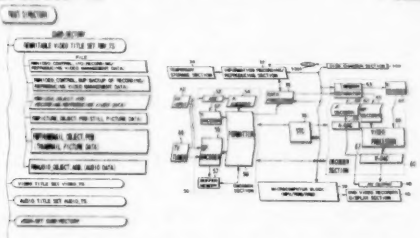
Hideo Ando, Tokyo, and Hiroaki Unno, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of application No. 09/311,272, filed on May 14, 1999. This application Aug. 30, 2000, Appl. No. 651,298.

Claims priority, application Japan, May 15, 1998, 10-133832

***Int. Cl. H04N** 5/92;5/781*

U.S. Cl. 386—95 **7 Claims**



1. An information recording method of recording information on an information recording medium having a data recording portion and a management information recording portion, the information recording method comprising the steps of:

recording a video file including video data or an audio file including audio data, the video data or the audio data being constituted by at least one program;

recording a main management file including video or audio management information used in managing the video data in the video file or the audio data in the audio file; recording program chain information in the main management file, the program chain information designating a reproduction order of the video data or the audio data;

recording a back-up management file having the same contents as the main management file,

wherein the video file has an unrecorded area, and when information is recorded in the unrecorded area or deleted therefrom, the main management file and the back-up management file are updated by editing the program chain information of the main and back-up management files.

US 6,341,198 B1

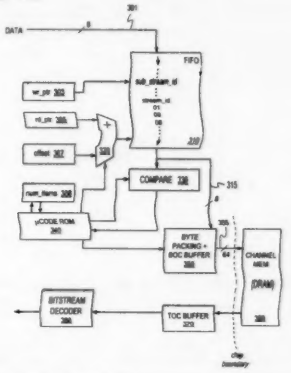
SYSTEM FOR BYTE PACKING MULTIPLE DATA CHANNELS IN AN MPEG/DVD SYSTEM

Todd C. Mendenhall, San Jose, Calif., and Manabu Gouzu, Tokyo, Japan, assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 26, 1998, Appl. No. 105,939

Int. Cl. H04N *5/52*

U.S. Cl. 386—98 **18 Claims**



1. A DVD player comprising:

an input that receives interleaved data comprising N types of data, wherein N is greater than 1, and wherein the input receives the data in units of a first number of bits;

a type-recognition block coupled to said input, wherein said type-recognition block determines a type of data received by said input;

a parsing block coupled to said input and to said type-recognition block, wherein said parsing block comprises:

N preliminary buffers corresponding to the N types of data, wherein said preliminary buffers are coupled to said input, and

a FIFO buffer coupled to each of said preliminary buffers and configured to receive a second number of bits from each of said preliminary buffers;

wherein said parsing block is operable to store data from said input into said preliminary buffers in response to the type of data received by said input so that each preliminary buffer receives a single type of data; and

wherein each of the preliminary buffers is operable to flush the second number of bits of data to said FIFO buffer after receiving the second number of bits from said input; and

a channel memory coupled to said FIFO, wherein the FIFO buffer outputs the second number of bits to said channel memory.

US 6,341,199 B1

APPARATUS, METHOD, AND RECORDING MEDIUM IMPLEMENTING AUDIO GAP INFORMATION FOR AN AUDIO PRESENTATION DISCONTINUOUS PERIOD

Tomoyuki Okada, Katano; Yoshihiro Mori, Hirakata; Kazuhiro Tsuga, Takarazuka; Hiroshi Hamasaka, Hirakata; Hideshi Ishihara, Katano; Kazuhiko Nakamura, Hirakata, and Takumi Hasebe, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of application No. 08/724,232, filed on Sep. 27, 1996, now Pat. No. 5,905,845. This application Mar. 5, 1999, Appl. *No. 263,201.*

Claims priority, application Japan, Sep. 29, 1995, 7-252735; Feb. 28, 1996, 8-41581

Int. Cl. H04N *5/92;5/85*

U.S. Cl. 386—98 **10 Claims**

1. A machine readable information recording medium having a bitstream carrying machine readable information, said machine readable information recording medium comprising:

NV
PCI
DSI
PKT
PTT
PCI general information (PCI_GI)
Start PTM of VOBU (VOBU_S_PTM)
End PTM of VOBU (VOBU_E_PTM)
Angle information for non-seamless (NSML_AGLI)
Destination address of angle cell number 1 (NSML_AGL_C1_DSTA)
Destination address of angle cell number 9 (NSML_AGL_C9_DSTA)
DSI general information (DSI_GI)
End address for VOB (VOBU_EA)
Seamless playback information (SML_PBI)
Interleaved unit flag (ILVU flag)
Unit end flag (Unit END flag)
Interleaved unit end address (ILVU_EA)
Next interleaved unit end address (NT_ILVU_SA)
Audio stop PTM 1 in VOB (VOB_A_STP_PTM1)
Audio gap length 1 in VOB (VOB_A_GAP_LEN1)
Audio stop PTM 2 in VOB (VOB_A_STP_PTM2)
Audio gap length 2 in VOB (VOB_A_GAP_LEN2)
Angle information for seamless (SML_AGLI)
Destination address of angle cell number 1 (SML_AGL_C1_DSTA)
Destination address of angle cell number 9 (SML_AGL_C9_DSTA)

a plurality of video packets, each of said plurality of video packets carrying encoded video data of one video frame in a compressed manner;

a plurality of audio packets, each of said plurality of audio packets carrying encoded audio data of one audio frame in a compressed manner, wherein the one audio frame is different in time length from the one video frame; and

a navigation pack having audio gap information operable to indicate a duration of an audio discontinuous part appearing in decoded audio data during audio presentation.

US 6,341,200 B1

LENS-FITTED FILM UNIT

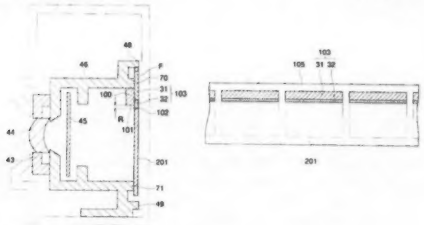
Kazuhiro Nakanishi; Kunikazu Takano; Hiroshi Kibayashi; Hiromi Nakanishi; Tetsufumi Takaba, all of Hino; Wataru Hiroshima, Hamura; Tsuyoshi Takeda, Hamura; Akira Aoki, Hamura, and Kanichi Onda, Hamura, all of Japan, assignors to Konica Corporation, Japan

Filed May 6, 1999, Appl. No. 306,352

Claims priority, application Japan, May 7, 1998, 10-124675; May 15, 1998, 10-133018; Jun. 18, 1998, 10-171339; Jul. 17, 1998, 10-219616

Int. Cl. G03B *17/02;17/24;11/00*

U.S. Cl. 396—6 **13 Claims**



1. A lens-fitted film unit comprising:

(a) a main body;

(b) a photographic lens provided in the main body, having an aperture value;

(c) an aperture provided in the main body;

(d) a shutter provided in the main body;

(e) a photographic film loaded in the main body, having image frames each including an unexposed portion and a pre-exposed portion on which a latent image has been formed; and

(f) a masking member for masking the pre-exposed portion of the photographic film when a photographing operation is conducted,

wherein the latent image has been formed on the photographic film with a same exposure amount as that obtained when an object to be photographed having a brightness of not less than 10 and not more than 12.5 in terms of light values in which a photographic film whose ISO sensitivity is 100, is exposed to light with an aperture value of the photographic lens set by the aperture and with the shutter speed of the shutter.

US 6,341,201 B1

REMOTELY CONTROLLABLE CAMERA SYSTEM

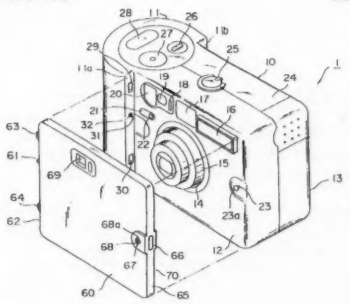
Minoru Ishiguro; Yasuhiko Tanaka; Fumio Iwai; Yasuhiro Nishitani, and Kazuhisa Horikiri, all of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan, and Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1998, Appl. No. 162,756

Claims priority, application Japan, Sep. 30, 1997, 9-267266; Dec. 11, 1997, 9-341746

Int. Cl. G03B *17/38;17/02;11/04*

U.S. Cl. 396—56 **36 Claims**



1. A camera system comprising:

a camera body having at least a taking lens and exposure means for performing exposure;

a lens cover type of operation card incorporating a function of operating said camera system for covering said taking lens when attached as an operation card to a front of said camera body and remotely operating said camera system while remaining detached from said camera body, said operation card being attachable to one of exteriors of said camera body other than said front and enabling said camera system to be operated through said operation card when attached to said one exterior of said camera body;

operation card detection means for detecting whether said operation card is attached to said one exterior of said camera body;

remote control setting means incorporated in said operation card for putting said camera body in a remotely controllable operation mode in which said camera system is controlled through said operation card detached from said camera body; and

control means for detecting whether said camera body is put in said remotely controllable operation mode when said operation card detection means detects said operation card detached from said one exterior of said camera body, holding said camera body effective in making exposure while determining said camera body put in said remotely controllable operation mode and disabling said camera body from making exposure while determining said camera body put out of said remotely controllable operation mode.

US 6,341,202 B1

OPERATION DIAL WITH AN ILLUMINATOR FOR A CAMERA

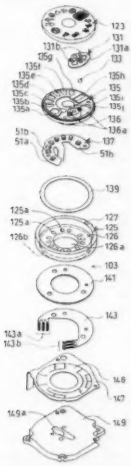
Tetsuo Hosokawa; Toshihiro Hamamura, both of Tokyo; Hiroyuki Takahashi, Tochigi; Shigeru Iwamoto; Tadahisa Ohkura, both of Saitama, and Hidefumi Kaneko, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 2000, Appl. No. 598,799

Claims priority, application Japan, Jun. 22, 1999, 11-175570; Jun. 22, 1999, 11-175968; Jun. 24, 1999, 11-178423

Int. Cl. G03B *17/00*

U.S. Cl. 396—281 **54 Claims**



1. An operation device of a camera, the operation device comprising:

an indication member comprising a plurality of characters, each character of the plurality of characters being representative of at least one of a mode, a function and a setting;

an operation member which is mechanically movable relative to said indication member, said operation member comprising an index mark for pointing at one of said plurality of characters when said operation member stops at a corresponding stop position; and

an illuminating device which illuminates the one of said plurality of characters at which said index mark points, said illuminating device comprising a plurality of light emitters, each of said plurality of light emitters illuminating a corresponding one of said plurality of characters; and

the camera comprising:

a control device for selecting the at least one of a mode, a function and a setting which corresponds to the one of said plurality of characters at which said index mark is set to operate in accordance with said selected mode, function and setting.

US 6,341,203 B1

IMAGE FORMING APPARATUS AND METHOD WITH ADJUSTABLE IMAGE DENSITY FACTOR

Hiroshi Nakazato; Yoshio Nakazawa, and Takashi Hama, all of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 24, 2000, Appl. No. 624,487

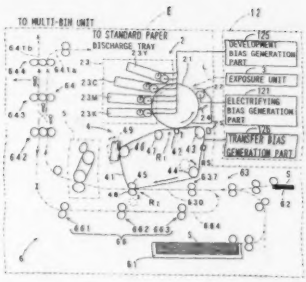
Claims priority, application Japan, Jul. 28, 1999, 11-213653; Jul. 28, 1999, 11-213654; Jul. 28, 1999, 11-213655; Sep. 6, 1999, 11-252259; Jun. 5, 2000, 12-167282

Int. Cl. G03G *15/00*

U.S. Cl. 399—49 **26 Claims**

1. An image forming apparatus for forming an image which has a predetermined target density, comprising:

image forming means for forming the image;



density detecting means for detecting an image density of the image which is formed by said image forming means; and

control means having a plurality of processing modes, which are different from each other, for calculating at least one density controlling factor, said control means selectively executing one of said plurality of processing modes in accordance with an operation status of said apparatus, each of said plurality of processing modes being a mode in which a plurality of patch images are formed by said image forming means while changing said at least one density controlling factor, which influences the image density of the image, and an optimal value of said at least one density controlling factor, which is necessary to adjust the image density of the image to the target density, is determined based on the densities of said patch images.

US 6,341,204 B1

DEVELOPMENT APPARATUS EMPLOYING TONER SUPPLY ROLLER COMPRISING ELECTRICALLY CONDUCTIVE FOAMED MATERIAL LAYER

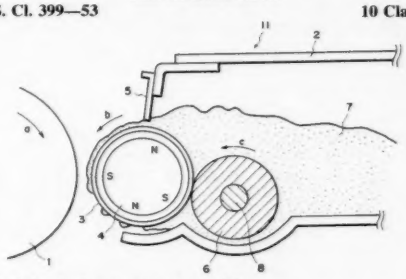
Satoshi Tomiki, Kawasaki, and Yoshiaki Kobayashi, Souka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1995, Appl. No. 570,637

Claims priority, application Japan, Dec. 9, 1994, 6-330909

Int. Cl. G03G *15/08*

U.S. Cl. 399—53 **10 Claims**



1. A developing apparatus comprising:

a toner carrying member for carrying a magnetic toner disposed in opposing relation to an image bearing member to form a developing zone;

a magnetic member having a plurality of magnetic poles in said toner carrying member;

a toner supplying rotary member for applying the toner onto said toner carrying member and stripping the toner from said toner carrying member, said toner supplying rotary member comprising a surface layer of electrically conductive foam material, wherein said toner supplying rotary member effects application and stripping of the toner at a position between the magnetic poles; and

grounding means for electrically grounding the surface layer, said grounding means being effective to remove an electric charge, which the surface layer receives when the toner is stripped off said toner carrying member.

US 6,341,205 B1
IMAGE FORMING APPARATUS WITH CLEANING BIAS FEATURE

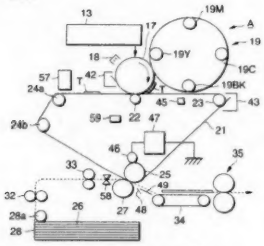
Naoto Yoshino, and Masaaki Takahashi, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 27, 2000, Appl. No. 627,300

Claims priority, application Japan, Sep. 8, 1999, 11-254684; Sep. 14, 1999, 11-260362

Int. Cl. **G03G** *15/16*

U.S. Cl. 399—101 **4 Claims**



1. An image forming apparatus comprising:

a belt-like image carrier which holds a visible image formed of a charged colorant and is circularly moved;

a transfer roll which is disposed to be brought into press contact with a front surface of the image carrier through a recording medium and collectively transfers the visible image on the image carrier onto the recording medium;

a backup roll which is disposed opposite to the transfer roll to be brought into press contact with a rear surface of the belt-like image carrier and forms a transfer nip region of a predetermined width with the transfer roll; and

a transfer bias application part which applies a transfer bias voltage to at least one of the backup roll and the transfer roll;

wherein a cleaning bias voltage having a polarity opposite to the transfer bias voltage is applied to at least one of the backup roll and the transfer roll, and an output value of the cleaning bias voltage is controlled so that a potential difference between the belt-like image carrier and the transfer roll becomes optimum for cleaning and the output value of the cleaning bias voltage is controlled according to a system resistance between the backup roll and the transfer roll.

US 6,341,206 B1
IMAGE DEVELOPING APPARATUS HAVING DEVELOPER SEAL

Naoki Yamaguchi; Junichi Tanizaki; Takeshi Houman, all of Fukuoka; Toshimi Hattori, Saga; Yoshihiro Mizoguchi, Fukuoka; Yoshiaki Ijima, Fukuoka, and Yuzo Kawano, Fukuoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 8, 2000, Appl. No. 590,650

Claims priority, application Japan, Jun. 10, 1999, 11-163287; Jun. 10, 1999, 11-163288; Aug. 5, 1999, 11-222414

Int. Cl. **G03G** *15/08*

U.S. Cl. 399—103 **20 Claims**

1. An image developing apparatus comprising:

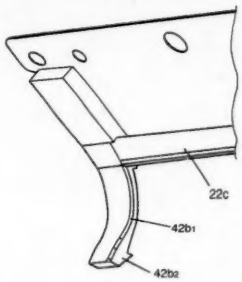
a photosensitive body;

an image-developing roller operable to feed toner to an electrostatic latent image formed on said photosensitive body;

a feeding roller operable to feed the toner to said image-developing roller;

a housing cassette having said image-developing roller and said feeding roller mounted thereon, said housing cassette being operable to store the toner;

a toner layer thickness regulating device having a plate-like shape mounted on said housing cassette, said toner layer thickness regulating device being operable to regulate a layer thickness of the toner fed to said image-developing roller;



a sheet member disposed between a development area of said image-developing roller and a position of pressed contact between said image-developing roller and said feeding roller, said sheet member being operable to prevent the toner from leaking by maintaining a uniform contact with said image-developing roller along a longitudinal direction thereof; and

toner sealing means made of a resilient material, said toner sealing means being operable to prevent the toner from leaking, and said toner sealing means being one of fixed integrally to both ends of said toner layer thickness regulating device, and formed integrally as one unit with said toner layer thickness regulating device.

US 6,341,207 B1
CLEANERLESS IMAGE FORMING METHOD AND SYSTEM THEREFOR

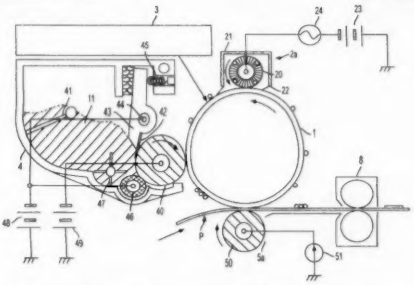
Sachio Sasaki; Jun Kodama; Tomohisa Mikami, and Masatoshi Kimura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of application No. 08/070,889, filed on Jun. 3, 1993, now abandoned. This application Feb. 14, 2000, Appl. No. 503,162.

Claims priority, application Japan, Jun. 16, 1992, 4-156805

Int. Cl. **G03G** *15/24*

U.S. Cl. 399—149 **11 Claims**



1. An image-forming apparatus, comprising:

a rotary endless image carrier on which an electrostatic latent image is formed;

a charge device to charge said carrier;

an image forming device to form the electrostatic latent image on said carrier;

a developer to develop the electrostatic latent image on said carrier by supplying polymerization toners, the polymerization toners being supplied between an electrically charged developing roller and an electrically charged layer-thickness reducing blade;

a rotary transfer roller to press a sheet to said carrier with the polymerization toners and thereby transfer the developed electrostatic latent image to the sheet; and

a transfer bias unit to apply a transfer bias current to said rotary transfer roller.

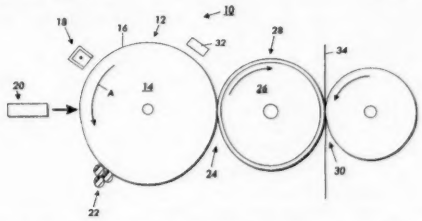
US 6,341,208 B1
ABSORBENT COATING FOR CONTACT TRANSFER OF LIQUID TONER IMAGES

Chu-heng Liu, Penfield, and Weizhong Zhao, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application No. 09/232,814, filed on Jan. 19, 1999. This application Jun. 27, 2000, Appl. No. 604,514.

Int. Cl. G03G *15/10*

U.S. Cl. 399—237 **33 Claims**



1. A method for contact transferring a toner image from an image bearing member to a substrate, comprising:

placing a toner image over an image bearing member having an absorbent layer, the toner image comprising toner particles suspended in a carrier liquid;

absorbing carrier liquid from the toner image into the absorbent layer;

transferring the toner image to the substrate;

wherein the steps of absorbing and transferring occur between the temperatures of about 25° C. and about 35° C.; and

wherein the toner image comprises a phased-film-forming ink.

US 6,341,209 B1
METHOD OF CONTROLLING AN INK AGITATOR OF A WET-TYPE ELECTROPHOTOGRAPHY PRINTER

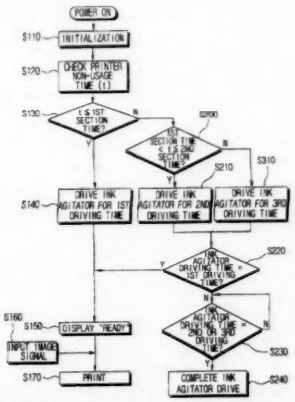
Jong-woo Kim, Suwon, and Hyong-gu Lee, Kunpo, both of Rep. of Korea, assignors to Sasung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 20, 2000, Appl. No. 714,969

Claims priority, application Rep. of Korea, Nov. 20, 1999, 99-51746

Int. Cl. G03G *15/10*

U.S. Cl. 399—237 **20 Claims**



1. A method of controlling an ink agitator of a wet-type electrophotographic printer, comprising the steps of:

after turning the printer power on and before printing, determining a value for the non-usage time of the printer;

determining a value of ink agitator driving time which is dependent upon the determined value of the non-usage time; and

driving the ink agitator for the determined value of ink agitator driving time.

US 6,341,210 B1
TONER CARTRIDGE

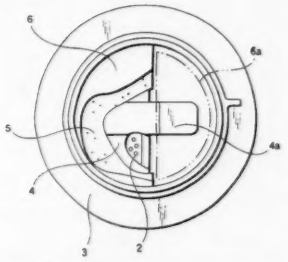
Kenji Nozawa; Masayuki Ainoya; Yoshitaka Fujinuma, and Yuichiro Suzuki, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Sep. 18, 2000, Appl. No. 664,065

Claims priority, application Japan, Sep. 17, 1999, 11-263350

Int. Cl. G03G *15/08*

U.S. Cl. 399—262 **2 Claims**



1. A toner cartridge comprising:

a container for containing toner of a volume of 2500 cm^3 or more, the container defining an opening portion;

a cap fixed to the opening portion of the container, the cap defining a first semicircle opening portion;

a film covering and sealing the first semicircle opening portion of the cap; and

a shutter rotatably disposed on the cap, the shutter defining a second semicircle opening portion capable of corresponding to the first semicircle opening portion of the cap, and the shutter having a diameter of 70 mm or above.

US 6,341,211 B1
INDUCTIVE THERMAL FUSING DEVICE

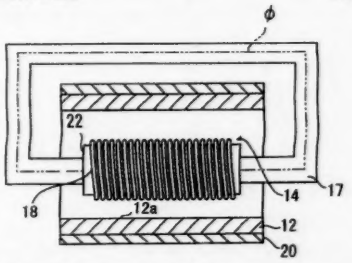
Takahiro Tsujimoto, Toyokawa, and Akinori Kimata, Toyohashi, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jul. 11, 2000, Appl. No. 613,897

Claims priority, application Japan, Jul. 15, 1999, 11-202021

Int. Cl. G03G *15/20*

U.S. Cl. 399—330 **18 Claims**



1. An inductive thermal fusing device comprising:

a conductive member for applying heat to a recording medium holding toner;

an iron core which forms a closed loop, and part of which is inserted into an empty space inside the conductive member;

a coil wrapped around the iron core and along the length of the empty space inside the conductive member;

a power supply for supplying AC voltage to the coil; and

a modulator for changing the frequency of the AC voltage provided by the power supply.

US 6,341,212 B1

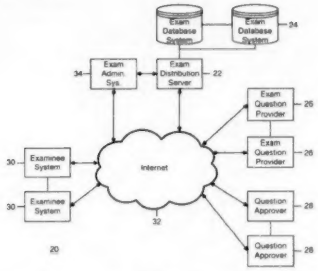
SYSTEM AND METHOD FOR CERTIFYING INFORMATION TECHNOLOGY SKILL THROUGH INTERNET DISTRIBUTION EXAMINATION

Anil M. Shende, Roanoke; Linda N. Dalch, Richmond, and Mark R. Warner, Alexandria, all of Va., assignors to Virginia Foundation for Independent Colleges, Richmond, Va.

Filed Dec. 17, 1999, Appl. No. 466,181

Int. Cl. G09B *3/00*

U.S. Cl. 434—350 **20 Claims**



1. A method for certifying information technology skills for a plurality of examinees comprising the steps of:

generating an examination that tests the examinees' information technology skills in each of a plurality of sections, the sections comprising an Internet skills section and a computer application program utilization skills section, wherein the Internet skills section includes at least one question which asks the examinee to evaluate at least one web site for certain characteristics;

enabling examinees to access an examination server over a network to take the examination;

administering the examination generated from the examination server to the examinees over the network;

storing the examination results at the examination server;

scoring the examination; and

issuing a certification to examinees that achieve a predetermined score on the examination, wherein the certification is utilized by a plurality of employers to determine a degree of competence in information technology skills.

US 6,341,213 B1

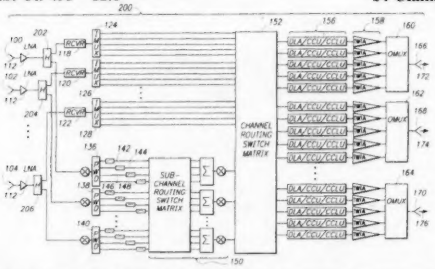
DYNAMIC REPEATER CONFIGURATION FOR MULTILINK SATELLITE SYSTEMS WITH ROBUST SUBCHANNEL INTERCONNECT CAPABILITY

Shih-Chang Wu, Alhambra, Calif., assignor to Hughes Electronics Corporation, El Segundo, Calif.

Filed Aug. 11, 1999, Appl. No. 372,532

Int. Cl. H04Q *7/20;7/36*

U.S. Cl. 455—12.1 **14 Claims**



1. A dynamic repeater apparatus for interconnecting communication channels and subchannels between an uplink signal and a downlink signal, comprising:

an input multiplexer for receiving the uplink signal and for producing at least a first channel signal therefrom;

a subchannel routing switch matrix for receiving the uplink signal, for separating at least one channel signal into at least one subchannel, for routing the subchannel from a selected uplink subchannel into a selected downlink subchannel, and for recombining the selected downlink subchannels into a second channel signal; and

a channel routing switch matrix, coupled to the input multiplexer through a first input and coupled to the subchannel routing switch matrix through a second input, for routing the first channel signal into a first downlink channel signal and the second channel signal into a second downlink channel signal; and

an output multiplexer for collecting the first and second downlink channels and combining them into the downlink signal.

US 6,341,214 B2

TRANSMISSION POWER CONTROL METHOD AND TRANSMISSION/RECEPTION APPARATUS

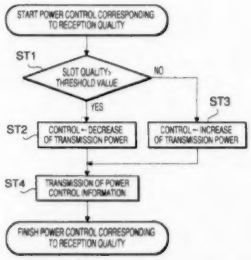
Mitsuru Uesugi, Yokosuka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 4, 1998, Appl. No. 185,507

Claims priority, application Japan, Nov. 13, 1997, 9-329559

Int. Cl. H04Q *7/30;7/32;7/20*

U.S. Cl. 455—69 **23 Claims**



1. A transmission of power control method in a CDMA communication system comprising:

detecting a quality of a signal received from a communication unit;

generating power control information indicative of increasing transmission power of the communication unit when the detected quality is higher than a threshold value and of decreasing said transmission power when said detected quality is lower than said threshold value; and

transmitting the power control information.

US 6,341,215 B1

GLOBAL CHANNEL POWER CONTROL TO MINIMIZE SPILLOVER IN A WIRELESS COMMUNICATION ENVIRONMENT

Fatih M. Ozluturk, Port Washington, N.Y., assignor to InterDigital Technology Corporation, Wilmington, Del.

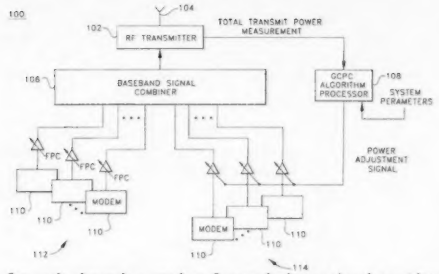
Continuation of application No. 09/196,808, filed on Nov. 20, 1998, now Pat. No. 6,181,919, which is a continuation of application No. 08/797,989, filed on Feb. 12, 1997, now Pat. No. 5,842,114. This application Sep. 20, 2000, Appl. No. 665,865.

This patent is subject to a terminal disclaimer.

Int. Cl. H04B *7/00*

U.S. Cl. 455—69 **9 Claims**

1. A transmitter for use in a spread spectrum wireless communication system, the transmitter transmitting a plurality of channels within a shared spectrum including a global channel, the transmitter comprising:



for each channel, a modem for producing a signal associated with that channel;

a signal combiner for combining the produced channel signals as a combined signal;

a radio frequency transmitter for transmitting the combined signal; and

a global channel power control processor for determining a desired transmit power level of the global channel based on in part a transmit power level of the combined signal; and

a power controller associated with the global channel for adjusting a transmit power level of the global channel to be the determined global channel transmit power level.

US 6,341,216 B1

TRANSMITTER-RECEIVER CIRCUIT FOR RADIO COMMUNICATION AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Junji Itoh, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP96/03682, § 371 Date Jun. 17, 1998, § 102(e) Date Jun. 17, 1998, PCT Pub. No. WO97/23053, PCT Pub. Date Jun. 26, 1997

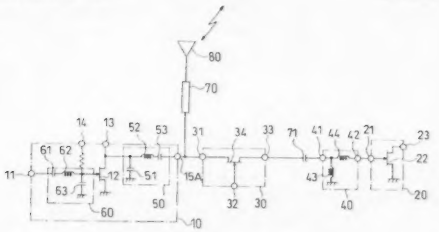
PCT Filed Dec. 17, 1996, Appl. No. 91,268

Claims priority, application Japan, Dec. 18, 1995, 7-329210

This patent is subject to a terminal disclaimer.

Int. Cl. H04B *1/48*

U.S. Cl. 455—83 **4 Claims**



1. A transmitter-receiver circuit for a wireless communication unit, comprising:

a transmitter amplifier for amplifying and outputting an input signal to be transmitted;

a receiver amplifier for amplifying and outputting an input received signal; and

a mode switch, connected to an antenna used for both transmission and reception, for switching a transmission state where the signal to be transmitted, which has been output by the transmitter amplifier, is output to the antenna and a reception state where the received signal, to be input to the receiver amplifier, is input through the antenna,

characterized in that the transmitter amplifier includes:

an amplifying FET, having a gate electrode connected to an input terminal of the signal to be transmitted, a drain electrode connected to a power supply terminal and a source electrode grounded;

a matching circuit, connected between the drain electrode of the FET and the antenna, for matching output impedance of the FET with impedance on an antenna side;

a control terminal connected to the gate electrode of the FET; and

an output terminal directly connected to the antenna without passing through the mode switch.

US 6,341,217 B1

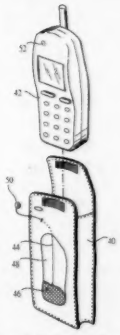
PORTABLE TELEPHONE WITH SHIELDED TRANSMISSION ANTENNA

Alfred Y. Wong, Los Angeles, Calif., assignor to A. W. Technologies, LLC, Beverly Hills, Calif.

Continuation of application No. 09/241,623, filed on Feb. 1, 1999. This application Oct. 19, 1999, Appl. No. 420,953.

Int. Cl. H04B *1/38; 1/04;* **H04M** *1/00*

U.S. Cl. 455—90 **23 Claims**



1. An accessory for a portable telephone having a main antenna, and an external antenna receptacle comprising:

a jacket for the portable telephone;

a radio frequency antenna disposed within the jacket;

a connector coupled to the radio frequency antenna for mating engagement with the external antenna receptacle to enable the radio frequency antenna, and to disable the main antenna; and

a metallic shield spaced apart from the radio frequency antenna so as to be disposed between the radio frequency antenna and a user of the portable telephone, thereby reflecting energy radiated by the radio frequency antenna in a direction away from the user.

US 6,341,218 B1

SUPPORTING AND CONNECTING A PORTABLE PHONE

Ralph C. Poplawsky, Littleton; Kathryn D. Delianides, Boulder, and James T. Wilkinson, Highlands Ranch, all of Colo., assignors to CellPort Systems, Inc., Boulder, Colo.

Filed Dec. 6, 1999, Appl. No. 454,506

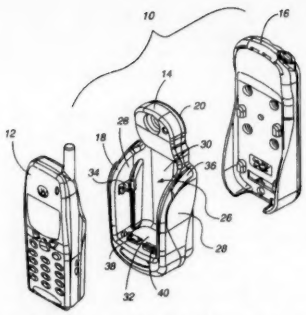
Int. Cl. H04Q *7/32*

U.S. Cl. 455—90 **46 Claims**

1. An adaptor for hands-free operation of a portable phone, comprising:

an interchangeable pocket member having a receiving section and a mounting section, said receiving section adapted to receive a portable phone, said pocket member also having a latching mechanism to retain said portable phone in said receiving section, a first connector interfacing with the electronics of the portable phone, and a second connector interfacing with the electronics of an interface module;

an interface module having a receiving section configured to mate with said mounting section of said pocket member, a latching mechanism to retain said pocket member in said receiving section and a connector interfacing with said second connector of said pocket member.



wherein said interchangeable pocket member is received and removed from said receiving section of said interface module by movement of said pocket member in a substantially single dimension, and continued movement of said pocket member toward said interface module in said substantially single dimension mechanically and electronically interconnects said pocket member and said interface module.

US 6,341,219 B1

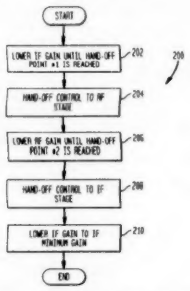
SINGLE-SOURCE AUTOMATIC POWER CONTROL METHOD AND APPARATUS FOR FREQUENCY-DIVERSE VARIABLE-GAIN STAGES OF A CDMA CELLULAR HANDSET

John R. Poirier, Gilbertsville, and Christopher J. Strobel, Barto, both of Pa., assignors to Agere Systems Guardian Corp., Miami Lakes, Fla.

Filed Feb. 5, 1999, Appl. No. 244,858

Int. Cl. H04B *1/04*

U.S. Cl. 455—116 **62 Claims**



1. An automatic and adjustable output power control method for a telephone handset, said method comprising:

providing a control signal;

altering a gain of a first transmitting stage of the handset to satisfy at least one system parameter in response to a first variation of the control signal;

altering a gain of a second transmitting stage of the handset to satisfy at least one additional system parameter in response to a second variation of the control signal; and

varying the altered gain of the first transmitting stage in response to a third variation of the control signal,

wherein a total gain of a transmitting portion of the handset is equal to a summation of the gain of the first transmitting stage and the gain of the second transmitting stage, the gain of the first transmitting stage comprises a product of a voltage of the control signal and a gain slope of the first transmitting stage, the gain slope of the first transmitting stage comprising a division of a gain range of the first transmitting stage by a control voltage range of the first transmitting stage.

US 6,341,220 B1

FINDING COPIED SIM CARDS

Jaana Hurme, Tampere, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

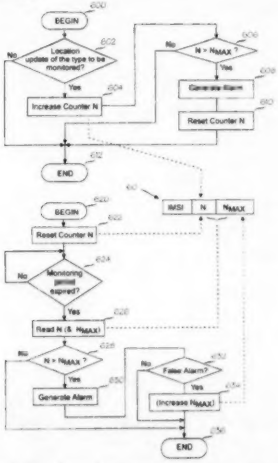
PCT No. PCT/FI98/00202, § 371 Date Oct. 30, 1998, § 102(e) Date Oct. 30, 1998, PCT Pub. No. WO98/41050, PCT Pub. Date Sep. 17, 1998

PCT Filed Mar. 6, 1998, Appl. No. 180,034

Claims priority, application Finland, Mar. 10, 1997, 970993

Int. Cl. H04M *1/66*

U.S. Cl. 455—410 **14 Claims**



1. A method for detecting copying of a subscriber identity (IMSI) in a mobile communication network in which the location of mobile stations (MS) is updated in at least one register (HLR, VLR) of the network, comprising:

monitoring, for at least some of the mobile stations (MS), the number (N) of location updatings of at least one type during a predetermined monitoring period;

comparing said number of location updatings to a predetermined threshold value (N_{MAX});

maintaining a group of special subscribers; and

in response to said number (N) of location updatings exceeding the predetermined threshold value (N_{MAX}), generating a signal indicative of exceeding said predetermined threshold value (N_{MAX}) *only when a subscriber is not one of said special* subscribers.

US 6,341,221 B1

METHOD OF MANAGING A SUBSCRIBER SERVICE BY AN INTELLIGENT NETWORK SERVICE

Seppo Huotari, Espoo, Finland, assignor to Nokia Networks Oy, Espoo, Finland

Continuation of application No. PCT/FI99/00430, filed on May 18, 1999. This application Oct. 31, 2000, Appl. No. 702,495.

Claims priority, application Finland, May 19, 1998, 981113

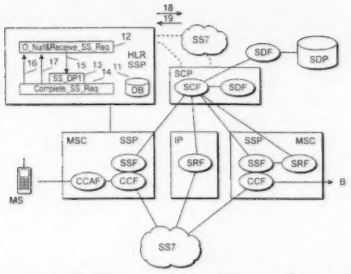
Int. Cl. H04M *3/42*; **H04Q** *7/20*

U.S. Cl. 455—414 **4 Claims**

1. A method of managing a subscriber service by an intelligent network service in a telecommunications system, the method comprising:

communicating in a mobile communication network, wherein the network includes a home location register, at least one switching center, and an intelligent network that includes a service control point and a number of network elements having a service switching function;

processing a detection point by at least part of a service switching function of the home location register;



inserting an intelligent network service related to a subscriber service into the service control point, the intelligent network service including a management function which is activated in response to encountering a detection point having a predetermined trigger condition, wherein the trigger condition includes when a mobile subscriber wants to manage a subscriber service or an intelligent network service related to the mobile subscriber;

inserting the predetermined detection point into the home location register, wherein in response to detecting fulfillment of the predetermined trigger condition, the home location register sends an initial message to the service control point to activate the management function; and

in response to the initial message, the service control point sending intelligent network service instructions to the home location register.

US 6,341,222 B1

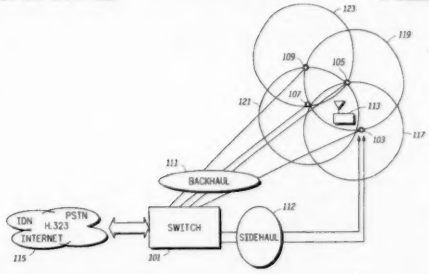
METHOD AND APPARATUS FOR PERFORMING SELECTION AND DISTRIBUTION IN A COMMUNICATION SYSTEM

Phillip D. Neumiller, Cary; Paul M. Popowski, Palatine, and Ron Rotstein, Buffalo Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1998, Appl. No. 185,899

Int. Cl. H04Q *7/20*

U.S. Cl. 455—422 **4 Claims**



100

1. A method for performing selection within a communication system, the method comprising the steps of:

receiving communication from a remote unit at a base station;

determining a work load metric for the base station;

performing selection functions at the base station for the remote unit when the work load metric is lower than neighboring base stations, otherwise;

failing to perform selection for the remote unit while continuing to receive communication from the remote unit at the base station, wherein the step of performing selection functions comprises the step of selecting a best frame from a plurality of calls.

US 6,341,223 B1

RADIO WAVE PROPAGATION PREDICTION METHOD USING URBAN CANYON MODEL

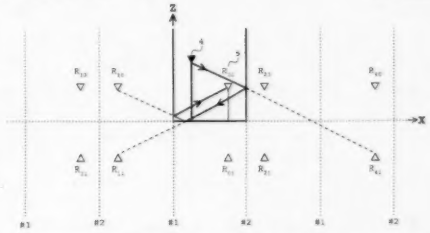
Jee-Yeon Park, Sungnam, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Apr. 22, 1999, Appl. No. 298,047

Claims priority, application Rep. of Korea, Apr. 23, 1998, 98-14497

Int. Cl. H04Q *7/36*

U.S. Cl. 455—446 **12 Claims**



1. A computer-implemented method for predicting the characteristics of wave propagation in an urban environment, comprising the steps of:

defining an urban canyon having boundaries comprising a pair of building surfaces and a ground surface, and having transmitting and receiving antennas therein;

establishing a plurality of first reflection points on said ground and building surfaces at which direct rays from a transmitting antenna are reflected;

defining a plurality of image antennas, each corresponding to a reflection off a building or ground surface in said urban canyon;

determining propagation paths corresponding to said image antennas, wherein the propagation paths are determined by finding a reflection order of the propagation paths using a total reflection count according to the number and the propagation paths of said image antennas and counts of the propagation of waves reflected off the building surfaces prior to the propagation of waves reflected off the ground surface;

computing respective reflection electric field vectors of said propagation paths corresponding to the image antennas; and

determining the total receiving power of a receiving antenna through said computed reflection electric field vectors of the propagation paths and a unit polarization vector of the receiving antenna.

US 6,341,224 B1

POWER CONTROLLER FOR MOBILE COMMUNICATION SYSTEM WHEREIN A SIGNAL TO INTERFERENCE THRESHOLD IS DYNAMICALLY MOVED BASED ON AN ERROR RATE MEASUREMENT

Tomohiro Dohi; Syunsuke Seo; Yukihiko Okumura, and Mamoru Sawahashi, all of Yokohama, Japan, assignors to NTT Mobile Communications Network, Inc., Tokyo, Japan

PCT No. PCT/JP97/02215, § 371 Date Feb. 27, 1998, § 102(e) Date Feb. 27, 1998, PCT Pub. No. WO97/50197, PCT Pub. Date Dec. 31, 1997

PCT Filed Jun. 26, 1997, Appl. No. 29,534

Claims priority, application Japan, Jun. 27, 1996, 8-167054

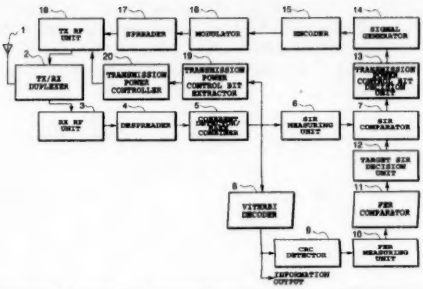
Int. Cl. H04B *1/00*

U.S. Cl. 455—522 **10 Claims**

1. A transmission power controller of at least one of a base station and a mobile station in a mobile communication system including said base station and said mobile station, comprising:

means for measuring a received SIR (signal-to-interference plus noise power ratio);

means for comparing a measurement result of said received SIR with a target value of SIR;



means for outputting transmission power control information to an opposing station according to a result of said comparing of said measurement result of said received SIR with said target value of SIR;

means for receiving and demodulating said transmission power control information;

means for controlling transmission power of said opposing station according to said demodulated transmission power control information;

means for detecting a CRC (cyclic redundancy check) bit added to a wireless frame signal, and outputting a frame error detection signal when a CRC bit is not detected;

means for counting the number of said frame errors in a measuring time which is longer than a SIR measuring period, using said outputted detection signal;

means for comparing said number of counted frame errors with a predetermined frame error number setting value; and

means for changing said SIR target value according to a result of said comparing of said number of measured frame errors with said predetermined frame error number setting value, by either the base station or the mobile station.

US 6,341,225 B1

METHOD FOR IMPROVING PERFORMANCES OF A MOBILE RADIOCOMMUNICATION SYSTEM USING POWER CONTROL

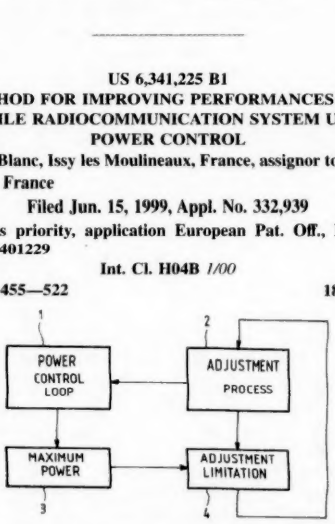
Patrick Blanc, Issy les Moulineaux, France, assignor to Alcatel, Paris, France

Filed Jun. 15, 1999, Appl. No. 332,939

Claims priority, application European Pat. Off., May 21, 1999, 99401229

Int. Cl. H04B *1/00*

U.S. Cl. 455—522 **18 Claims**



1. A method for improving the performance of a mobile radiocommunication system using a power control loop which controls transmission power according to a transmission quality target value and an adjustment process for adjusting said transmission quality target value, a method wherein said adjustment process is limited, based on the thus controlled transmission power reaching a maximum transmission power value.

US 6,341,226 B1

MOBILE COMMUNICATION APPARATUS AND METHOD OF RECEIVING MOBILE COMMUNICATION SIGNALS

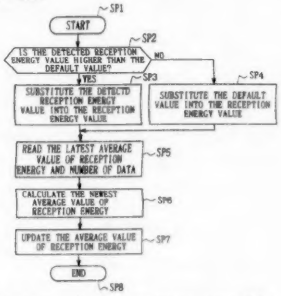
Katsuya Yamamoto, and Masahiko Naito, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1999, Appl. No. 272,388

Claims priority, application Japan, Mar. 23, 1998, 10-074623

Int. Cl. H04Q *7/32*

U.S. Cl. 455—525 **6 Claims**



1. A mobile communication apparatus, comprising:

an antenna for receiving signals transmitted from a plurality of base stations;

demodulating means for demodulating a single received signal of a plurality of received signals received by said antenna;

detecting means for repeatedly and successively detecting reception energy values of said plurality of received signals; and

control means for calculating, whenever said detecting means detects each of said reception energy values of said plurality of received signals, an average value of said reception energy values, comparing said average value with the reception energy values, and demodulating a reception signal having a largest reception energy value with said demodulating means,

wherein said control means uses a number N of reception energy values of said plurality of received signals to calculate said average value, wherein N is at least two,

wherein said control means stores said number N of reception energy values of said plurality of received signals and reads said number N of reception energy values to calculate said average value, and

wherein said control means stores the number N and a latest average value A_{old} of reception energy values, and obtains a newest average value A_{new} by using a detected newest reception energy value E_{new}, where

$$A_{new}=\{A_{old}\times(N-1)+E_{new}\}/N.$$

US 6,341,227 B1

METHOD AND APPARATUS FOR REDUCING EFFECT OF MISMATCHES AND INCREASING THE RIGIDITY OF MOBILE COMMUNICATION DEVICE

Erik Möster; Paul Larsson; Mats Olsson, all of Malmö; Olof Simonsson, Lund; Mats Larsson, and Rafael Portela, both of Malmö, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Filed Jun. 11, 1999, Appl. No. 330,913

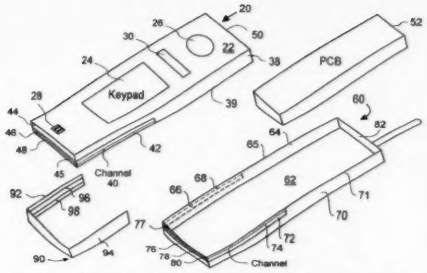
Int. Cl. H04B *1/38*

U.S. Cl. 455—550 **17 Claims**

1. A mobile communication device, comprising:

a printed circuit board having electrical and electromechanical components for transceiving electromagnetic signals;

a front cover having a front panel and including first and second opposing walls depending from the front panel and terminating in opposing edges, the first and second opposing walls including first locking channels extending proximate the edges;



a back cover having a back panel and including first and second opposing walls depending from the back panel and terminating in opposing edges, the first and second opposing walls including second locking channels extending along a portion of the wall proximate the edges;

the front cover mechanically connectable to the back cover to define a seam between the edges of the front cover and the back cover; and

a cover connector member having a first leg and a second leg connected by a base, and including

a first locking member depending from an inner surface of the cover connector member and dimensioned to fit securely within the first locking channels, and

a second locking member depending from an inner surface of the cover connector member and dimensioned to fit securely within the second locking channels;

such that, when the communication device is assembled, the cover connector member provides a secure mechanical connection between the front cover and the back cover and conceals a portion of the seam between the front cover and back cover of the mobile communication device.

US 6,341,228 B1

METHOD OF PARAMETERIZING THE DISPLAY ON MOBILE RADIO COMMUNICATIONS EQUIPMENT CO-OPERATING WITH A SUBSCRIBER IDENTITY MODULE

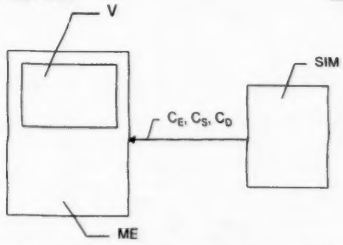
Pascal Hubbe, Paris, and Frédéric Vasnier, Colombes, both of France, assignors to Alcatel, Paris, France

Filed Apr. 6, 1999, Appl. No. 286,842

Claims priority, application France, May 7, 1998, 98 05834

Int. Cl. H04Q *7/20*

U.S. Cl. 455—566 **11 Claims**



1. A method of parameterizing the display on display means associated with a piece of radiocommunications mobile equipment co-operating with a subscriber identity module, the method having the following steps in order:

said subscriber identity module sends a set of commands to said mobile equipment, said commands enabling the display on said display means to be parameterized; and

said commands are executed by said mobile equipment on said display means,

wherein said set of commands includes an activation command enabling the display means to be divided into display areas.

US 6,341,229 B1

WEARABLE APRON FOR USE IN EGG AND OTHER MEDICAL TESTS

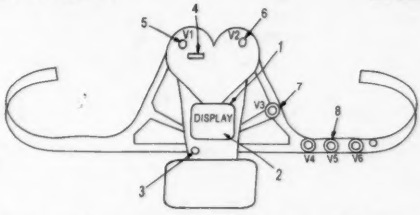
Sharon Akiva, Caesarea, Israel, assignor to Tapuz Medical Technology Ltd., Caesarea, Israel

Filed Jun. 7, 1999, Appl. No. 326,641

Claims priority, application Israel, Jun. 14, 1998, 124900

Int. Cl. A61B *5/0402;5/0205;5/053;5/01;5/08*

U.S. Cl. 600—388 **24 Claims**



1. An examination apron, wearable on an upper body portion of a patient for independently performing medical examinations of the patient, the examination apron comprising:

a plurality of ECG electrodes arranged on the examination apron for detecting ECG signals of the patient;

a plurality of microphones arranged on the examination apron for recording heartbeat sounds of the heart of the patient from predetermined standard points on the chest of the patient, wherein at least one of the ECG electrodes and at least one of the microphones are placed adjacent or integrated on the examination apron;

a processing unit for receiving and processing at least one of the detected ECG signals from the ECG electrodes and the recorded heartbeat sounds from the microphones, and generating at least one of an ECG test result and a heart auscultation test result; and

an output device for outputting said at least one of the ECG test result and the heart auscultation test result.

US 6,341,230 B1

BIOMEDICAL ELECTRODE

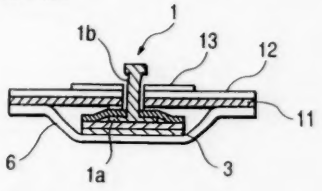
Yasuaki Koike; Takayuki Kawasaki; Shigehiro Nishiwaki, all of Tokyo; Tadashi Matsumoto, and Hideo Akita, both of Osaka, all of Japan, assignors to Nihon Kohoen Corporation, Tokyo, and Kabushikikaisya Kyoma, Osaka, both of Japan

Filed Mar. 27, 2000, Appl. No. 534,566

Claims priority, application Japan, Mar. 25, 1999, 11-081322

Int. Cl. A61B *5/0408*

U.S. Cl. 600—392 **7 Claims**



1. A biomedical electrode comprising:

an electrode element having a conductive gel layer adhering to one end of the electrode element;

a tape retaining the other end of the electrode element and the tape adapted to be plastered on a biological surface tissue, the tape being made of a flexible, extendable, and thin film; and

a reinforcing cover film for removably covering the side of the tape opposite the surface adapted to be plastered on the biological surface tissue, said reinforcing cover film being provided on the tape.

US 6,341,231 B1

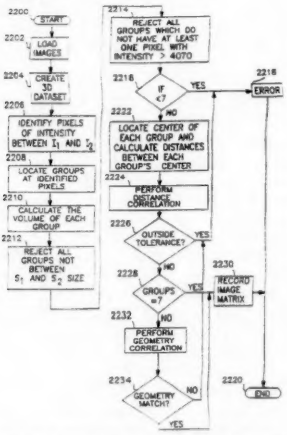
POSITION TRACKING AND IMAGING SYSTEM FOR USE IN MEDICAL APPLICATIONS

Maurice R. Ferre, North Andover; Peter D. Jakab, Canton, and James S. Tieman, Watertown, all of Mass., assignors to *Visualization Technology, Inc., Boston, Mass.*

Continuation of application No. 09/212,024, filed on Dec. 15, 1998, which is a continuation of application No. 08/637,289, filed on Apr. 24, 1996, now Pat. No. 5,873,822, which is a division of application No. 08/527,517, filed on Sep. 13, 1995, now Pat. No. 5,803,089, which is a continuation-in-part of application No. 08/306,818, filed on Sep. 15, 1994, now Pat. No. 5,829,444. This application Oct. 11, 2000, Appl. No. 686,188.

Int. Cl. A61B *5/05*

U.S. Cl. 600—424 **18 Claims**



1. A computerized method for registering the orientation of a patient in a surgical environment with the orientation of scan images of said patient, said method comprising:

securing a body attachment unit including a plurality of fiducial elements to said patient's body;

locating positions of said fiducial elements on said scan images;

evaluating relative distances between each of said fiducial elements on said scan images, and producing a matrix of said distances;

determining an optimal correlation between a matrix of prerecorded distances between said fiducial elements on said body attachment unit and said matrix of said distances; and

generating an equation that transforms position data with respect to said patient into position data with respect to said scan images.

US 6,341,232 B1

METHODS OF PRODUCING COLLECTION ASSEMBLIES, LAMINATES, AND AUTOSENSOR ASSEMBLIES FOR USE IN TRANSDERMAL SAMPLING SYSTEMS

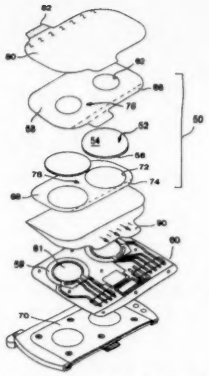
Thomas E. Conn, Palo Alto; Russell Ford, San Francisco; *Pravin L. Soni, Sunnyvale; Michael J. Tierney, San Jose, and* Prema Vijayakumar, Fremont, all of Calif., assignors to Cygnus, Inc., Redwood City, Calif.

Continuation of application No. 09/309,616, filed on May 11, 1999, Provisional application No. 60/085,345, filed on May 13, 1999. This application Mar. 16, 2001, Appl. No. 810,917.

Int. Cl. A61N *1/30*; **A61B** *5/05*

U.S. Cl. 604—20 **59 Claims**

1. A method of producing a collection assembly, for use in an iontophoretic sampling device useful to monitor a selected analyte or derivatives thereof present in a biological system, said method comprising:



providing (a) first and second collection inserts each insert comprising an ionically conductive material having first and second surfaces;

(b) a mask comprising (i) a material that is substantially impermeable to the selected analyte or derivatives thereof, and (ii) inner and outer faces, wherein said mask defines first and second openings and a border; and

(c) a retaining layer, comprising inner and outer faces, wherein said retaining layer defines first and second openings and a border; and

positioning (a) the inner face of the mask in facing relation with the first surface of each collection insert, such that (i) said first and second openings of the mask are, respectively, aligned with the first and second collection inserts (ii) each opening of the mask exposes at least a portion of the first surface of the collection insert with which it is aligned, and (iii) said border extends beyond the first surface of each of the collection inserts to provide an overhang; and

(b) the inner face of the retaining layer in facing relation with the second surface of each collection insert, such that (i) said first and second openings of the retaining layer are, respectively, aligned with the first and second collection inserts, (ii) each opening of the retaining layer exposes at least a portion of the second surface of the collection insert with which it is aligned, and (iii) said border extends beyond the first surface of each of the collection inserts to provide an overhang, thereby resulting in production of said collection assembly.

US 6,341,233 B1

DEVICE FOR MAINTAINING A NATURAL HEART RHYTHM

David Hastings, Lake Oswego, Oreg.; Max Schaldach, Erlangen, Germany; Gary Rolison, Portland, and Robert R. Weyant, Dureham, both of Oreg., assignors to Biotronik Mess-Und Therapiegerate GmbH & Co., Berlin, Germany

Filed Mar. 31, 1999, Appl. No. 281,875

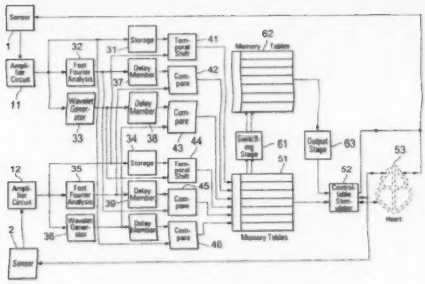
Claims priority, application Germany, Mar. 31, 1998, 198 15 539

Int. Cl. A61N *1/362*

U.S. Cl. 607—9 **8 Claims**

1. A device for maintaining or re-establishing a natural heart rhythm by generating an electrical stimulation signal, the device having the form of an implantable heart pacemaker, comprising:

two sensors adapted to be arranged inside a patient's body for picking up one or more body-specific signals containing information relevant to the patient's heart, the two sensors being adapted for generating a signal that is proportional to a body-specific time delay signal; and



a processing unit connected downstream of the two sensors for obtaining, from the temporal difference of the one or more body-specific signals received at the two sensors, the proportional body-specific time-delay signal that represents the duration of the ascertained time delay

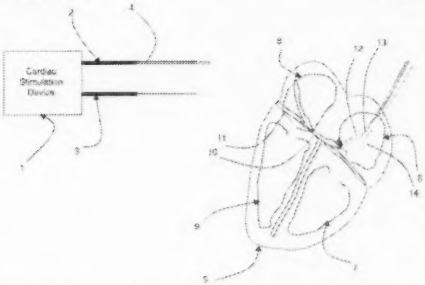
wherein the proportional body-specific time-delay signal forms at least a control signal for influencing the point in time or the time sequence of the stimulation signal and the selection of the proportional body-specific time-delay signal occurs by means of digital filtering or by the use of a correlation technique.

US 6,341,234 B1

TRIPOLAR STIMULATION OF HEART CHAMBERS

Tran Thong, Portland, Oreg., and Max Schaldach, Erlangen, Germany, assignors to Biotronik Mess-und Therapiegeracte GmbH & Co. Ingenieurbuero Berlin, Berlin, Germany

Filed Jun. 16, 1999, Appl. No. 335,037
Int. Cl. A61N *1/362*
U.S. Cl. 607—9 **17 Claims**



1. A method of implementing tripolar cardiac stimulation in a heart, comprising the steps of:

(a) implanting a cardiac stimulation device having anodic and cathodic connections and including means for providing electrical stimulation pulses through said anodic and cathodic connections;

(b) electrically connecting first and second electrode lines to respective ones of the anodic and cathodic connections;

(c) electrically coupling at least two electrodes to one of the electrode lines;

(d) electrically coupling at least one electrode to the other electrode line; and

(e) implanting at least one of the at least two electrodes electrically coupled to the one electrode line and the at least one electrode electrically coupled to the other electrode line in a heart chamber; and

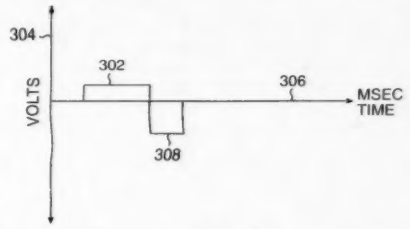
(f) implanting at least one other of the at least two electrodes electrically coupled to the one electrode line in a blood vessel of the heart.

US 6,341,235 B1

AUGMENTATION OF ELECTRICAL CONDUCTION AND CONTRACTILITY BY BIPHASIC CARDIAC PACING ADMINISTERED VIA THE CARDIAC BLOOD POOL

Morton M. Mower, Baltimore, Md., assignor to Mower CHF Treatment Irrevocable Trust, Baltimore, Md.

Continuation-in-part of application No. 09/008,636, filed on Jan. 16, 1998, now Pat. No. 6,136,019, which is a continuation-in-part of application No. 08/699,552, filed on Aug. 19, 1996, now Pat. No. 5,871,506. This application Oct. 18, 2000, Appl. No. 690,947.
This patent is subject to a terminal disclaimer.
Int. Cl. A61N *1/362*
U.S. Cl. 607—9 **24 Claims**



1. An apparatus for electrical cardiac pacing, the apparatus comprising:

leads for applying electrical stimulation to a cardiac blood pool; and

stimulation generator connected to the leads, wherein the stimulation generator produces a biphasic electrical waveform to stimulate the cardiac blood pool via the leads to effect cardiac pacing, the electrical waveform comprising:

a first stimulation phase with a first phase polarity, a first phase amplitude, a first phase shape and a first phase duration; and

a second stimulation phase with a second phase polarity, a second phase amplitude, a second phase shape and a second phase duration;

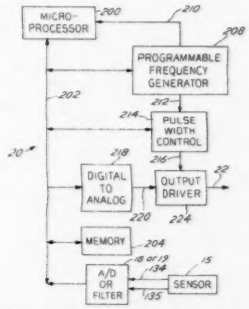
wherein the first phase polarity is positive.

US 6,341,236 B1

VAGAL NERVE STIMULATION TECHNIQUES FOR TREATMENT OF EPILEPTIC SEIZURES

Ivan Osorio, 4005 W. 124th St., Leawood, Kans. 66209, and Mark G. Frei, 2513 via Linda Dr., Lawrence, Kans. 66047

Filed Apr. 30, 1999, Appl. No. 302,516
Int. Cl. A61N *1/36*
U.S. Cl. 607—45 **6 Claims**



1. A method of controlling or preventing epileptic seizures comprising the steps of:

(a) implanting a signal generator in a body;

(b) implanting at least one electrode to be in communication with a vagus nerve of said body, including the step of implant-

ing a first pair of electrodes, wherein the first pair includes an anode and a cathode, and wherein the anode is proximal to the heart relative to the cathode;

(c) coupling said at least one electrode to said signal generator;

(d) operating said signal generator to provide stimulation pulses to the vagus nerve via said at least one electrode;

(e) generating a sensor signal indicative of a characteristic of a heart; and

(f) regulating said stimulation pulses in response to said sensor signal, whereby epilepsy is treated.

US 6,341,237 B1

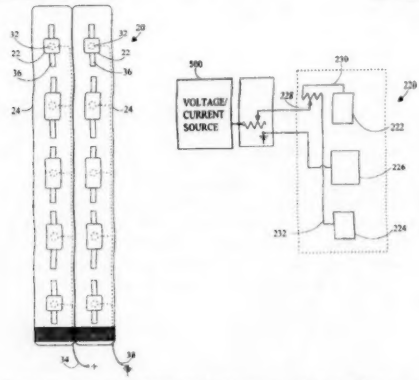
DEVICE FOR ADMINISTRATING ELECTRO-MUSCLE STIMULATION AND METHOD OF USE

Arthur F. Hurtado, 7750 Big Rock Dr., Riverside, Calif. 92509

Filed Oct. 25, 1999, Appl. No. 425,996

Int. Cl. A61N *1/04*

U.S. Cl. 607—148 **11 Claims**



1. A device for administrating electro-muscle stimulation, comprising a flexible covering having a plurality of spaced apart electrodes, said electrodes disposed in a pattern upon said flexible covering which matches a predetermined group of human muscles, so that when said flexible covering is placed upon a patient, said electrodes are proximate to the predetermined group of muscles, wherein said pattern matches predetermined groups of muscles, the muscles being the upper portion of the rectus abdominus, the lower portion of the rectus abdominus, the right obliques, and the left obliques.

US 6,341,238 B1

ROBUST ENGINE VARIABLE VANE MONITOR LOGIC

Douglas P. Modeen; John E. Games, both of Granby, and Norman J. Faust, Meriden, all of Conn., assignors to United Technologies Corporation, Windsor Locks, Conn.

Filed Oct. 1, 1998, Appl. No. 164,544

Int. Cl. G05B *19/18;* **F01B** *25/06;25/00;25/20;25/26*

U.S. Cl. 700—66 **7 Claims**

1. A method of testing a control for a system for positioning an actuator comprising:

computing an ideal actuator position;

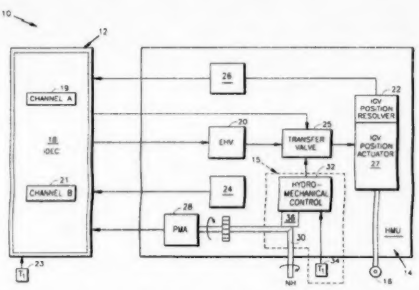
measuring an actual actuator position;

determining a difference between said ideal actuator position and said measured actual actuator position;

comparing said difference to a first threshold value;

indicating a first failure if said difference exceeds said first threshold;

comparing said difference to a second threshold value if said difference does not exceed said first threshold value;



indicating a second failure if said difference exceeds said second threshold for a time exceeding a time limit.

US 6,341,239 B1

ELECTRONIC CONTROL UNIT AND METHOD HAVING PROGRAM REWRITING FUNCTION

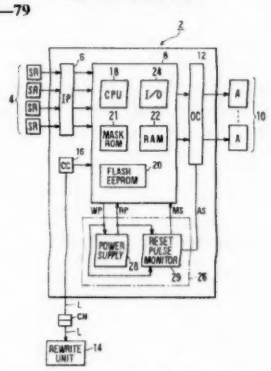
Shinnosuke Hayashi, Nukata-gun, and Keiji Sugai, Kariya, both of Japan, assignors to Denso Corporation, Kariya, *Japan*

Filed Mar. 24, 1999, Appl. No. 275,400

Claims priority, application Japan, Mar. 25, 1998, 10-077577

Int. Cl. G05B *9/02*

U.S. Cl. 700—79 **4 Claims**



4. An electronic control method for a microcomputer having a CPU for executing a first control program, a nonvolatile rewritable memory storing the control program and a monitor circuit, the microcomputer being connectable to an external rewrite unit for transmitting a second control program, the method comprising the steps of:

monitoring, by the monitor circuit, a first control program execution process of the microcomputer;

applying a monitor signal indicative of a monitoring result from the monitor circuit to the microcomputer;

transmitting the second control program from the external rewrite unit to the microcomputer; and

rewriting the transmitted second control program into the nonvolatile rewritable memory in place of the first control program under a condition that the monitor signal is indicative of abnormality of the microcomputer;

executing, immediately after starting an operation from a reset state, a starting program stored in a non-rewrite-object nonvolatile memory thereby determining a level of a mode determining binary signal inputted to a self specific input terminal, and in accordance with the level of the mode determining binary signal, switching a self operation mode into either one of a normal mode to execute the control program stored in the rewritable nonvolatile memory and a rewrite mode to execute the rewrite process; and

outputting from the monitor circuit a reset pulse for resetting the microcomputer to a reset terminal of the microcomputer, and outputting the mode determining binary signal of a level corresponding to the rewrite mode to the specific input terminal of the microcomputer, when determining the execution state of the control program by the microcomputer as being abnormal.

US 6,341,240 B1

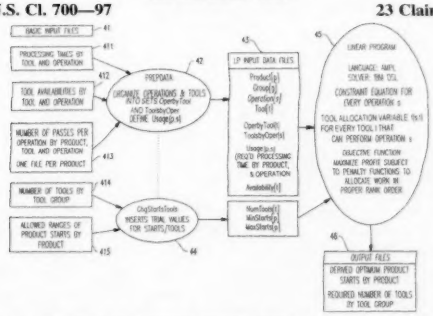
METHOD OF ALLOCATING WORK IN CAPACITY PLANNING

Stuart Bermon, Mt. Kisco, and Gerald E. Feigin, Scarborough, both of N.Y., assignors to International Business Machines Corporation, Amonk, N.Y.

Continuation-in-part of application No. 08/901,300, filed on Jul. 28, 1997. This application Jun. 4, 1999, Appl. No. 325,545.

Int. Cl. G06F *19/00*

U.S. Cl. 700—97 **23 Claims**



1. A computer implemented method providing accurate capacity planning for manufacturing environments comprising parallel, unrelated tools that can process the same operations at different rates and with preferences for the sequence in which those tools are selected to accommodate a workload, said method comprising the steps of:

inputting data detailing by time period, processing times, tool availabilities and load factors, and a number of passes per product for every operation on every tool group in a manufacturing line;

scanning a list of operations, locating identical operation names within cascade sets of tool groups and organizing the operations and tool groups into the appropriate cascade groups, OperbyGrp and ToolsbyGrp, respectively, as Linear Programming (LP) input data files, the step of organizing tool groups and the operations into the appropriate cascade groups as Linear Programming (LP) input data files including the step of combining processing times and number of times a product visits a particular operation into a derived quantity $U_{p,g,s}$, called Usage, which represents a required time to process a unit start of product p through all passes of an operation s, on a primary or otherwise preferred tool group contained in tool cascade group g;

calculating from the LP input data files an allocation of workload to parallel, unrelated tool groups in a cascade set, with a preference for an order in which the tool groups are to be used and in which ratios of process times of operations performed on different tool groups varies by operation;

generating output files which report the derived optimum product starts by product and required number of tools by tool group;

multiplying the Usage, $U_{p,g,s}$, for each operation s by a number of product starts, W_p, for product p;

summing over all Products, P, to obtain a total required time for that operation according to the expression

$$\sum_{p \in P} W_p U_{p,g,s}$$

thus obtaining a total required time referenced to the primary or otherwise preferred tool group in tool cascade group t for all products being processed through operation s;

then allocating the total required time over the tool groups contained in tool cascade group g capable of performing that operation, according to the expression

$$\sum f_{g,s,t} \frac{N_t A_t}{R_{g,s,t}},$$

each tool group having its own fractional allocation decision variable, $f_{g,s,t}$;

taking into account variable process time ratios, $R_{g,s,t}$, on such tool groups to a process time of the primary tool group by introducing an effective available time per day

$$\frac{A_t}{R_{g,s,t}},$$

obtained by dividing actual available time per day, A_t, by a respective variable process time ratio, $R_{g,s,t}$, and further multiplying by a number of tools in the tool group, N_t, to obtain an effective available time per day for an entire tool group;

summing the fractional allocation decision variable $f_{g,s,t}$ for each tool group over all operations contained within the set OperbyGrp[g], that contains all operations associated with the cascade group g, and then summing over all those tool cascade groups, ToolsbyGrp[g], to which that tool group belongs according to the expression

$$F_t = \sum_{g:t \in ToolsbyGrp[g]} \sum_{s \in OperbyGrp[g]} f_{g,s,t}$$

in order to obtain a total fractional use decision variable, F_t, for that tool group for use in a linear program (LP) objective function that constrains utilization of that tool group; and

employing penalty functions having very steep slopes above a fractional use (FracUse) of one, said penalty functions being so employed in order to achieve a feasible solution to the Linear Programming (LP) equations when tool groups are forced to be used beyond their capacity for product starts at the minimum of their ranges, said feasible solution providing information on the amount by which tool group capacity is exceeded.

US 6,341,241 B1

DEFECT ANALYSIS METHOD AND PROCESS CONTROL METHOD

Toshiaki Mugibayashi, and Nobuyoshi Hattori, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 09/089,356, filed on Jun. 3, 1998, now abandoned. This application Dec. 7, 1998, Appl. No. 206,150.

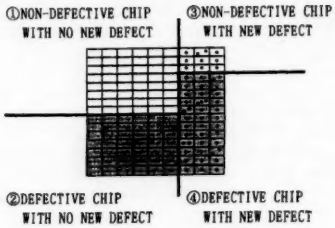
Claims priority, application Japan, Jan. 14, 1998, 10-005731; Sep. 2, 1998, 10-248156

Int. Cl. G06F *19/00*

U.S. Cl. 700—110 **20 Claims**

1. A defect analysis method of a device which includes an integrated circuit formed on each of a plurality of chips on a wafer through a plurality of processes, said defect analysis method comprising the steps of:

(a) after each of at least one process out of said plurality of processes, detecting a new defect due to said at least one



process and occurring in a new area of said wafer other than an area of a defect occurring at a previous process and its vicinity;

(b) after said plurality of processes are completed, making one of defective and non-defective judgment on said integrated circuit on each of said plurality of chips;

(c) judging a presence or absence of said new defect satisfying a predetermined identifying condition in each of said plurality of chips, for each of said at least one process;

(d) classifying said plurality of chips into four groups including non-defective chip with no said new defect, defective chip with no said new defect, non-defective chip with said new defect an defective chip with said new defect on a basis of a combination of the judgment of said step (b) and the judgment of said step (c), for each of said at least one process; and

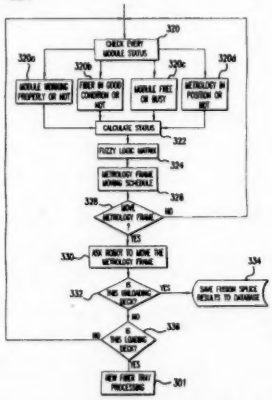
(e) calculating a number of new defective chips considered to be caused only by said new defect of said at least one process, on basis of the classification of said step (d).

US 6,341,242 B1

SYSTEM FOR CONTROLLING A PROCESS FOR INTERCONNECTION OF OPTICAL FIBERS INCLUDING FUZZY LOGIC CONTROL AND OPTIMIZATION ARCHITECTURE

Waqar Mahmood, Odenton; Jun Bao, Columbia, and Andrei Csipkes, Savage, all of Md., assignors to Ciena Corporation, Linthicum, Md.

Filed Oct. 30, 1998, Appl. No. 182,200
Int. Cl. G06F *19/00*
U.S. Cl. 700—117 **23 Claims**



1. A method for controlling an optical fiber interconnection processing system having a plurality of modules comprising:

polling all modules to be used during interconnection processing to determine a status of each module;

determining an overall status of the optical fiber interconnection processing system based on said polling; and

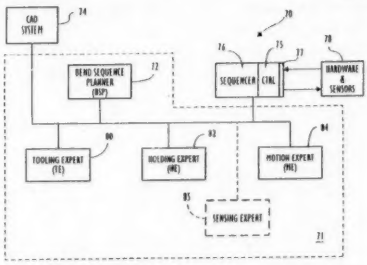
moving optical fibers through the interconnection processing system in accordance with the overall status.

US 6,341,243 B1

INTELLIGENT SYSTEM FOR GENERATING AND EXECUTING A SHEET METAL BENDING PLAN

David Allan Bourne; Duane Thomas Williams; Kyoung Hung Kim, all of Pittsburgh, Pa.; Sivaraj Sivarama Krishnan, Bangalore, India, and Kensuke Hazama, Buena Park, Calif., assignors to Amada America, Inc., Buena Park, Calif., and Amada Company, Ltd., Kanagawa, Japan

Continuation of application No. 08/386,369, filed on Feb. 9, 1995, now Pat. No. 5,969,973, which is a continuation of application No. 08/338,113, filed on Nov. 9, 1994, now abandoned. This application Dec. 8, 1998, Appl. No. 207,268.
This patent is subject to a terminal disclaimer.
Int. Cl. G06F *19/00*
U.S. Cl. 700—165 **79 Claims**



2. A system for generating a plan which comprises a sequence of operations to be performed by a bending apparatus for bending workpieces comprising sheets of malleable material, said sequence of operations comprising a set of N bends for forming a finished workpiece from a stock sheet of malleable material, said system comprising:

proposing means for proposing, for an Mth operation within the sequence of operations, a plurality of proposed operations including a plurality of proposed bends to be performed by said apparatus;

estimating means for estimating a cost to be associated with each proposed bend; and

generating means for generating a plan including a sequence of bends from a first through an Nth bend, by choosing each bend in the sequence of operations based upon the proposed bends and the estimated cost associated with each proposed bend.

US 6,341,244 B1

METHOD AND CONTROL STRUCTURE FOR CONTROLLING MOMENTS IN NUMERICALLY CONTROLLED ELASTIC (AND THEREFORE OSCILLATION-CAPABLE) MULTIPLE MASS SYSTEMS

Wolfgang Papiernik, Neunkirchen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

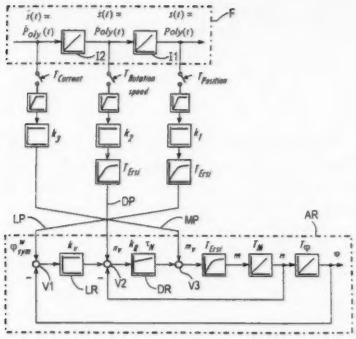
PCT No. PCT/DE96/01925, § 371 Date Apr. 7, 1999, § 102(e) Date Apr. 7, 1999, PCT Pub. No. WO98/15880, PCT Pub. Date Apr. 16, 1998
PCT Filed Oct. 8, 1996, Appl. No. 284,146
Int. Cl. G06F *19/00*
U.S. Cl. 700—170 **8 Claims**

1. A method for a feed-forward torque control of an elastic and oscillating multiple-mass system, comprising the steps of:

estimating parameters for controlling nominal motion states from an at least 4th-order reference model for controlling a motion of the multiple-mass system;

deriving, from the reference model for each axis control loop of the multiple-mass system, an axial nominal position angle, the axial nominal position angle being impressed via a nominal position value path in an interpolation cycle;

deriving, from the reference model in each axis control loop of the multiple-mass system, an axial nominal rotation speed



value, the axial nominal rotation speed value being impressed via an feed-forward rotation speed control path in the interpolation cycle;

deriving, from the reference model in each axis control loop of the multiple-mass system, an axial nominal drive torque value, the axial nominal drive torque value being impressed via an feed-forward torque control path in the interpolation cycle; and

deriving from the reference model a spring torque, the spring torque causing oscillations and being associated with a most pronounced natural frequency of the multiple-mass system, the spring torque being compensated for by applying disturbance variables to the feed-forward torque control path.

US 6,341,245 B1

MACHINE TOOL DISPLACEMENT CORRECTING APPARATUS

Toshihiro Ueta, Mishima, and Kazuo Nagashima, Shizuoka-ken, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

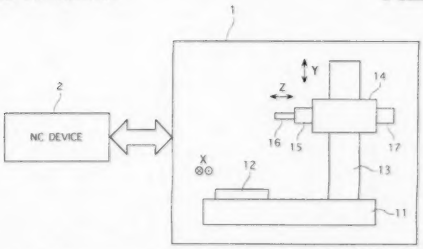
PCT No. PCT/JP97/00016, § 371 Date Jul. 8, 1998, § 102(e) Date Jul. 8, 1998, PCT Pub. No. WO97/25183, PCT Pub. Date Jul. 17, 1997

PCT Filed Jan. 8, 1997, Appl. No. 101,275

Claims priority, application Japan, Jan. 9, 1996, 8-001418

Int. Cl. G06F *19/00*

U.S. Cl. 700—194 **8 Claims**



1. A displacement compensation apparatus for machine tools to compensate the displacements that occurs from centrifugal force or heat generation caused by the rotation of a spindle in a machine tool, comprising:

a history file of data table which stores function values of the spindle rotation frequency in a plurality of time periods from present to past;

a corrective coefficient table in which correction coefficients are stored in a compensation process means, and

wherein said compensation process means is for reading out each location and the corrective coefficient corresponding to each location from the corrective coefficient table, concurrently reading out the function value for the spindle rotational frequency at each location from the historical data table, calculating a compensation value from the function value at each location and the corresponding corrective coefficient, and compensating a command position of each shaft in the machine based on the calculated compensation values.

US 6,341,246 B1

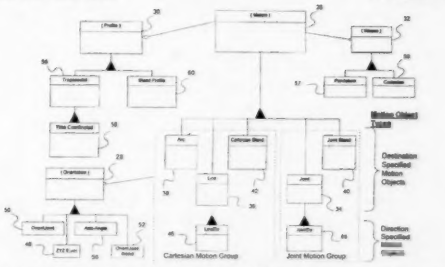
OBJECT ORIENTED MOTION SYSTEM

Michael D. Gerstenberger, Lake Orion; Scott D. Greig, Rochester; David M. Martin, Clarkston; Khalid Mirza, Rochester Hills, all of Mich., and El-Houssaine Waled, E. Windsor, Canada, assignors to KUKA Development Laboratories, Inc., Rochester Hills, Mich.

Filed Mar. 26, 1999, Appl. No. 277,641

Int. Cl. G06F *19/00*

U.S. Cl. 700—245 **11 Claims**



1. A motion system for controlling the movement of a robot arm through a servo system, comprising:

an object oriented motion system implemented as a plurality of software objects each encapsulating both functional implementation code and associated internal data structures:

wherein said plurality of software objects include the following software objects:

a trajectory generator object for producing a stream of machine motor commands;

a kinematics object operable to provide as et of robot arm specific functions for said trajectory generator objects; and

as servo object for interfacing to the servo system, such that the stream of machine motor commands are converted to a stream of signals to operate the robot arm.

US 6,341,247 B1

ADAPTIVE METHOD TO CONTROL AND OPTIMIZE AIRCRAFT PERFORMANCE

Mark A. Hreha, Alton, Ill., and Gerard Schkolnik, Palmdale, Calif., assignors to McDonell Douglas Corporation, Seattle, Wash.

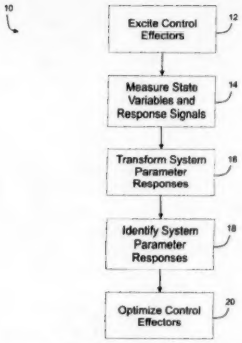
Filed Dec. 17, 1999, Appl. No. 465,897

Int. Cl. B64C *9/00;13/00;* **G05D** *1/00;3/00;* **G06F** *7/00;17/00;19/00*

U.S. Cl. 701—3 **8 Claims**

1. A method to modify a performance index of an airborne vehicle having a plurality of control effectors, each control effector controlled by an associated control signal, the stability of the vehicle defined by a plurality of state variables, the method comprising the steps of:

(a) generating and applying excitation inputs to at least one control signal associated with at least one selected effector chosen from the plurality of control effectors to modify the plurality of state variables and induce a response in the airborne vehicle reflected by a plurality of response signals, wherein each of the excitation inputs comprises a multi-term sinusoidal waveform, each term uniquely associated with a



particular system parameter and having a unique frequency selected such that each frequency is not a multiple of any other frequency;

(b) measuring a time domain response of each of the state variables, response signals, and control signals at a sampling rate, the time domain responses arising from the application of the excitation inputs to the control signals;

(c) transforming the measured time domain responses of the state variables, response signals, and control signals into frequency domain models;

(d) identifying effectiveness derivatives from the frequency domain models of the response signals and the control signals, the effectiveness derivatives representing the contribution that each of the one or more selected effectors has on a particular performance index;

(e) deriving a control effector setting for each of the one or more selected effectors based on the effectiveness derivatives; and

(f) modifying the performance index by adjusting the one or more selected effectors to its derived control effector setting.

US 6,341,248 B1

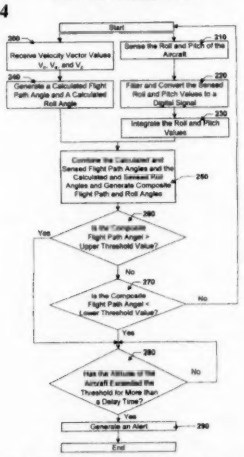
APPARATUS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR MONITORING THE ATTITUDE OF AN AIRCRAFT

Steven C. Johnson, Issaquah, Wash., assignor to Honeywell International, Inc., Morristown, N.J.

Provisional application No. 60/140,511, filed on Jun. 22, 1999. This application Jun. 22, 2000, Appl. No. 602,611.

Int. Cl. G06G *7/78*

U.S. Cl. 701—4 **62 Claims**


Start
200
Receive Velocity Vector Values
210
Sense the Roll and Pitch of the Aircraft
240
Generate a Calculated Flight Path Angle and A Calculated Roll Angle
220
Filter and Convert the Sensed Roll and Pitch Values to a Digital Signal
230
Integrate the Roll and Pitch Values
250
Combine the Calculated and Sensed Flight Path Angles and the Calculated and Sensed Roll Angles and Generate Composite Flight Path and Roll Angles
260
Is the Composite Flight Path Angel > Upper Threshold Value?
Yes
No
270
Is the Composite Flight Path Angel < Lower Threshold Value?
No
Yes
280
Has the Attitude of the Aircraft Exceeded the Threshold for More than a Delay Time?
No
Yes
Generate an Alert
290
End

1. An apparatus for monitoring the attitude of an aircraft comprising:

an input for receiving velocity values related to the velocity vector of the aircraft;

an output;

a generator in electrical communication with said input for determining a calculated flight path angle and a calculated roll angle of the aircraft based on a velocity vector of the aircraft; and

a first combiner in electrical communication with said generator and said output, wherein said first combiner combines the calculated flight path angle from said generator with a sensed pitch angle of the aircraft and the calculated roll angle from said generator with a sensed roll angle of the aircraft and provides a composite flight path angle and a composite roll angle representing the attitude of the aircraft to said output.

US 6,341,249 B1

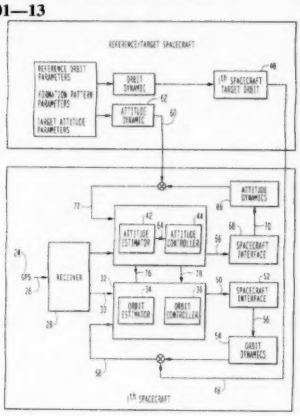
AUTONOMOUS UNIFIED ON-BOARD ORBIT AND ATTITUDE CONTROL SYSTEM FOR SATELLITES

Guang Qian Xing, 8515 Pelham Rd., Bethesda, Md. 20817, and Shabbir Ahmed Parvez, 2702 Copper Creek Rd., Herndon, Va. 20171

Provisional application No. 60/119,710, filed on Feb. 11, 1999. This application Feb. 9, 2000, Appl. No. 500,530.

Int. Cl. B64G *1/24*

U.S. Cl. 701—13 **23 Claims**



1. An on-board system for a first body in motion comprising:

a closed loop multivariable orbit controller;

a closed loop multivariable attitude controller;

a first and second receiver that receives positioning data;

an orbit converter that converts an orbit control problem into an orbit state-space form; wherein the orbit controller uses the positioning data to determine the body's position in an inertial coordinate system and uses the orbit state-space form to determine if the position of the first body needs to be altered in real time for minimization of at least one of position, position error, velocity and velocity error between the first body and a target; and

an attitude converter that converts an attitude control problem into an attitude state-space form; wherein the attitude controller uses the positioning data to determine the body's attitude and uses the attitude state-space form to determine if the position of the first body needs to be altered in real time for minimization of at least one of attitude, attitude angle, attitude angle error, angular velocity and angular velocity error between the first body and the target in the formation.

US 6,341,250 B1

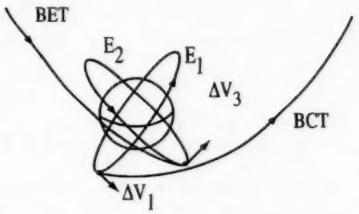
LOW ENERGY METHOD FOR CHANGING THE INCLINATIONS OF ORBITING SATELLITES USING WEAK STABILITY BOUNDARIES AND A COMPUTER PROCESS FOR IMPLEMENTING SAME

Edward A. Belbruno, Princeton, N.J., assignor to Galaxy Development, LLC, Van Nuys, Calif.

Continuation of application No. 09/304,265, filed as application No. PCT/US98/05784, filed on Mar. 25, 1998, now Pat. No. 6,097,997, Provisional application No. 60/041,465, filed on Mar. 25, 1977, Provisional application No. 60/044,318, filed on Apr. 24, 1997, Provisional application No. 60/048,244, filed on Jun. 2, 1997. This application Jul. 7, 2000, Appl. No. 612,262. This patent is subject to a terminal disclaimer.

Int. Cl. B64G *1/24;1/10*

U.S. Cl. 701—13 **21 Claims**



1. A method of changing at least one of an inclination and an altitude of an object including at least one of a space vehicle, satellite and rocket, using a computer implemented process, comprising the sequential or non-sequential steps of:

(a) traveling from the earth or the earth orbit to a weak lunar capture in a WSB or WSB orbit;

(b) performing a maneuver and optionally performing an inclination change at the WSB or the WSB orbit; and

(c) traveling from the WSB or the WSB orbit to the earth or the earth orbit at a predetermined arbitrary altitude and optionally at the inclination change.

US 6,341,251 B1

REAR WHEEL STEERING CONTROL SYSTEM FOR REAR TWO-AXLE VEHICLE

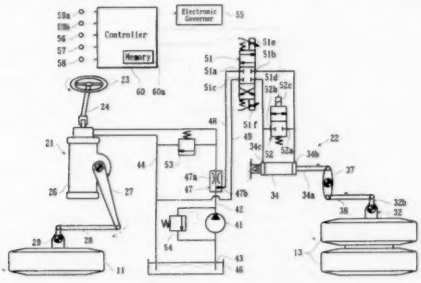
Mitsuru Enomoto, and Ryoe Watanabe, both of Tokyo, Japan, assignors to Hino Motors, Ltd., Tokyo, Japan

Filed Aug. 31, 2000, Appl. No. 651,838

Claims priority, application Japan, Aug. 31, 1999, 11-244700

Int. Cl. B62D *7/14*

U.S. Cl. 701—41 **4 Claims**



1. A rear front wheel steering control system for a rear two-axle vehicle, comprising:

front wheel steering means driven by an engine for steering front wheels;

rear front wheel steering means driven by said engine for steering rear front wheels;

a front steering angle sensor for detecting a steering angle of said front wheel;

a vehicle speed sensor for detecting a vehicle speed; and

a controller for controlling said engine and for controlling said rear front wheel steering means so as to steer said rear front wheels in the same direction as that of said front wheels based on the detection outputs of said front steering angle sensor and said vehicle speed sensor,

wherein said rear front wheel steering control system further comprises a rear steering angle sensor for detecting a steering angle of said rear front wheel;

when said vehicle speed sensor detects a vehicle speed lower than a first reference value, and a difference in steering angle between a target steering angle of said rear front wheel based on the steering angle of said front wheel calculated by said controller and an actually-measured steering angle of said rear front wheel detected by said rear steering angle sensor is not smaller than a second reference value, said controller increases the rotational speed of said engine to a third reference value; and

when said difference in steering angle becomes smaller than the second reference value or when a predetermined time has elapsed, said controller returns the rotational speed of said engine to the original value.

US 6,341,252 B1

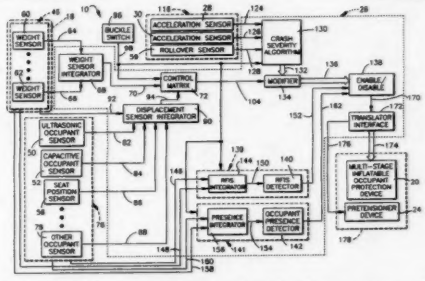
METHOD AND APPARATUS FOR CONTROLLING AN ACTUATABLE OCCUPANT PROTECTION DEVICE

Chek-Peng Foo, Ann Arbor; Carl A. Munch, Troy, both of Mich.; Steven M. Cash, Cedar Falls, Iowa; Timothy DeZorzi, South Lyon, Mich.; Farid Khairallah, Farmington Hills, Mich.; Stephen R. W. Cooper, Fowlerville, Mich.; Huahn-Fern Yeh, Novi, Mich., and Paul Leo Sumner, Farmington Hills, Mich., assignors to TRW Inc., Lyndhurst, Ohio

Filed Dec. 21, 1999, Appl. No. 468,807

Int. Cl. B06R *21/32*

U.S. Cl. 701—45 **23 Claims**



1. A method for controlling actuation of at least one actuatable occupant protection device associated with a vehicle seat, said method comprising the steps of:

receiving a first sensor signal having a first value indicative of a first sensed condition of an object of the vehicle seat;

receiving a second sensor signal having a second value indicative of a second sensed condition of the object of the vehicle seat, the second sensed condition being different from the first sensed condition;

determining a default value for the first sensed sensor signal upon determining the first value is outside an acceptable range of values; and

providing a control signal to control actuation of the at least one actuatable occupant protection device associated with the vehicle seat having a value that varies as a function of the second value and one of the first value and the determined default value.

US 6,341,253 B1

ENGINE CONTROL APPARATUS WITH CYLINDER DISCRIMINATION FUNCTION

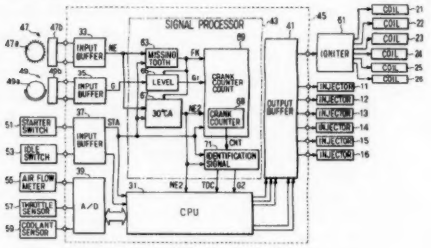
Takayoshi Honda, Kariya, Japan, assignor to Denso Corporation, Kariya, Japan

Filed Sep. 20, 2000, Appl. No. 665,693

Claims priority, application Japan, Sep. 24, 1999, 11-270925; Feb. 3, 2000, 12-026405

Int. Cl. F02P *5/15;7/067;* **G01B** *7/30*

U.S. Cl. 701—102 **7 Claims**



1. An engine control apparatus comprising:

first signal generating means for generating a reference position signal at a predetermined reference position of a crankshaft and rotation signals at every predetermined rotation of the crankshaft;

second signal generating means for generating a logical signal in response to a rotation of a shaft rotated at a rate of 1/2 of rotation of the crankshaft, the logical signal changes a logical level thereof alternately at timing of the reference position signal;

level reading means for reading the logical level of the logical signal in response to the reference position signal;

counting means for counting accumulated angle of rotation of the crankshaft during two rotations of the crankshaft using the rotation signals of the first signal generating means;

initializing means for initializing a count of the counting means to a first value and a second value when the output level read by the level reading mean is high and low, respectively; and

inhibiting means for inhibiting an operation of the initializing means when the logical level read this time by level reading means coincides with the logical level read previously by the level reading means.

US 6,341,254 B1

MAP DISPLAYING METHOD AND APPARATUS, AND NAVIGATION SYSTEM HAVING THE MAP DISPLAYING APPARATUS

Mariko Okude, Hitachi; Yoshinori Endo, Mito; Yasuhiro Gunji, and Kozo Nakamura, both of Hitachioota, all of Japan, assignors to Xanavi Informatics Corporations, Japan

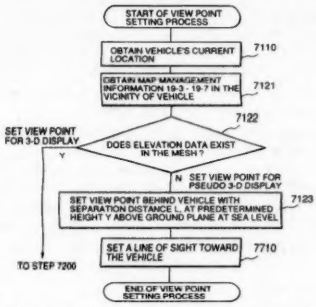
Continuation of application No. 08/963,607, filed on Oct. 31, 1997, now Pat. No. 6,175,802. This application Aug. 17, 2000, Appl. No. 640,522.

Claims priority, application Japan, Nov. 7, 1996, 8-294919

Int. Cl. G01C *21/00*

U.S. Cl. 701—208 **1 Claim**

1. A map database for storing map information which comprises a plurality of types of information regarding a first map mesh provided with height information and a second map mesh with no height information, comprising at least:


START OF VIEW POINT SETTING PROCESS
OBTAIN VEHICLE'S CURRENT LOCATION
7110
OBTAIN MAP MANAGEMENT INFORMATION 19-3 - 19-7 IN THE VICINITY OF VEHICLE
7121
7122
SET VIEW POINT FOR 3-D DISPLAY
DOES ELEVATION DATA EXIST IN THE MESH ?
Y
N
SET VIEW POINT FOR PSEUDO 3-D DISPLAY
SET VIEW POINT BEHIND VEHICLE WITH SEPARATION DISTANCE L, AT PREDETERMINED HEIGHT Y ABOVE GROUND PLANE AT SEA LEVEL
7123
SET A LINE OF SIGHT TOWARD THE VEHICLE
7710
TO STEP 7200
END OF VIEW POINT SETTING PROCESS

said height information as to the first map mesh; and

information for identifying that said second map mesh has no height information.

US 6,341,255 B1

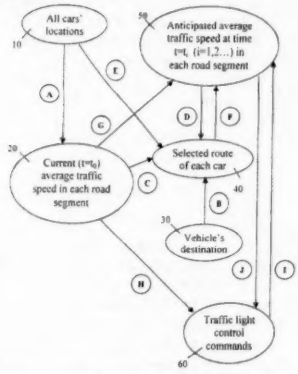
APPARATUS AND METHODS FOR PROVIDING ROUTE GUIDANCE TO VEHICLES

Dror Lapidot, Jerusalem, Israel, assignor to Decell, Inc., Wilmington, Del.

Filed Sep. 27, 1999, Appl. No. 406,537

Int. Cl. G06F *7/00*

U.S. Cl. 701—209 **50 Claims**



1. A route guidance system, for providing individualized route guidance to from at least one and up to each one of a plurality of selected individual vehicles, which are system participants, and which are moving in at least one traffic stream of a plurality of vehicles, the route guidance system comprising:

a.) a traffic velocity computer:

i.) for receiving and storing at least one item of information from up to each one of the at least one selected vehicle, the at least one item of information being selected from the group consisting of:

starting location information, including the starting position, for each one of the at least one selected vehicle to which route guidance is to be provided;

destination location information, including the destination position, for each one of the at least one selected vehicle to which route guidance is to be provided;

a plurality of pieces of intermediate location information for each one of the at least one selected vehicle to which route guidance is to be provided, with each piece of intermediate location information relating to a different intermediate position of the selected vehicle that is between the selected vehicle's stating position and its destination position, each piece of intermediate location information being measured at a different known time,

and such that pairs of pieces of location information are utilized to determine segments of a recommended route of travel for each vehicle to which route guidance is to be provided, with each pair of pieces of information being selected from the group consisting of: information relating to two of the plurality of intermediate vehicle positions for each selected vehicle, the staring position and one intermediate position for each selected vehicle, and one intermediate position and the destination position for each selected vehicle, and with each pair of pieces of location information having a predetermined time interval for travel therebetween at a measured vehicle velocity for the selected vehicle; and

a predetermined route, between a selected vehicle's starting location and its destination location, assigned to each of the at least one selected vehicle to which route guidance is to be provided; and

ii.) for computing and storing at least one velocity characteristic of the traffic stream in which a particular vehicle to which route guidance is to be provided is moving;

b.) a route selecting computer:

i.) for receiving and storing destination location information from each of the at least one selected vehicle moving in the at least one traffic stream and a current location information from each of the at least one selected vehicle, moving in the traffic stream; and

ii.) for computing a route for each selected vehicle moving in the at least one traffic stream, to which route guidance is to be provided, the route being composed of a plurality of route segments, such that each route segment is determined between a vehicle's current location and that vehicle's destination, the route being computed at least partly as a function of the at least one velocity characteristic of the traffic stream;

c.) at least one vehicle information transmitting means, such that there is a vehicle information transmitting means located in each one of the at least one selected vehicle moving in the traffic stream, the at least one vehicle information transmitting means being for transmitting at least one item of information about the vehicle in which that vehicle information transmitting means is located to at least one of the traffic velocity computer and the route selecting computer; and

d.) at least one vehicle on-board computer, located in each of the at least one selected vehicle moving in the traffic stream, for receiving and storing route information for that vehicle from the route selecting computer.

US 6,341,256 B1

CONSENSUS CONFIGURATIONAL BIAS MONTE CARLO METHOD AND SYSTEM FOR PHARMACOPHORE STRUCTURE DETERMINATION

Michael W. Deem, Cambridge, Mass.; Jonathan Marc Rothberg, Guilford, and Gregory T. Went, Madison, both of Conn., assignors to CuraGen Corporation, Branford, Conn.

Filed Mar. 31, 1995, Appl. No. 418,992

Int. Cl. G06F *19/00*

U.S. Cl. 702—19 **56 Claims**

1. A method of determining a consensus pharmacophore for binding to a target molecule at a temperature of interest, said method comprising determining a consensus structure for each of one or more peptides or peptide derivatives having a backbone represented by rigid molecular subunits connected by bonds, the bonds allowing torsional rotation of the rigid subunit, wherein said peptides or peptide derivatives bind to said target molecule at said temperature of interest, and wherein said determining of a consensus structure employs a consensus configurational bias Monte Carlo algorithm and comprises steps of repeatedly:

(a) generating proposed structures for each one of said peptides or peptide derivatives according to moves comprising constrained concerted torsional rotations about a limited region of the backbone by a method comprising

(i) making a torsional angle rotation about a chosen backbone bond, and

(ii) choosing subsequent backbone torsional rotations so that at least one and at most four contiguous rigid subunits of the backbone undergo a spatial displacement; and

(b) accepting a proposed structure for each one of said peptides or peptide derivatives according to a configurationally-biased Metropolis acceptance probability depending on a molecular Hamiltonian further including one or more heuristic constraint terms determined from the proposed structures for each one of said peptides or peptide derivatives, until sufficient structures have been generated and accepted to permit a statistically significant determination of a consensus structure for each peptide or peptide derivative, and

wherein said consensus pharmacophore comprises interatomic distances between selected chemical groups in each of said consensus structures.

US 6,341,257 B1

HYBRID LEAST SQUARES MULTIVARIATE SPECTRAL ANALYSIS METHODS

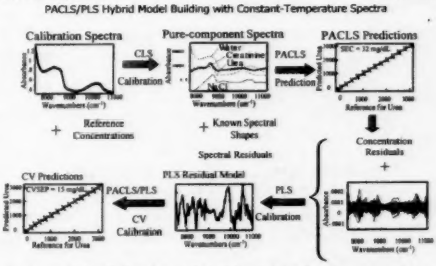
David M. Haaland, Albuquerque, N. Mex., assignor to Sandia Corporation, Albuquerque, N. Mex.

Provisional application No. 60/123,020, filed on Mar. 4, 1999, Provisional application No. 60/123,114, filed on Mar. 5, 1999. This application Mar. 3, 2000, Appl. No. 518,773.

Int. Cl. G06F *19/00*

U.S. Cl. 702—27 **19 Claims**

PACLS/PLS Hybrid Model Building with Constant-Temperature Spectra



1. A method of forming a hybrid model of at least one known constituent or property in a set of samples comprising:

(a) forming a classical least squares (CLS) calibration model of the at least one known constituent or property in the set of samples from reference values and measured responses to a stimulus of individual samples in the set of samples;

(b) estimating a CLS prediction value of the at least one known constituent or property in the set of samples from the CLS calibration model by a CLS prediction model, wherein the CLS prediction model produces residual errors;

(c) adding, as needed, spectral shapes representative of sources of signal variation not specifically modeled in step (a) to the CLS prediction model; and

(d) passing the residual errors to an inverse analysis algorithm, to provide a hybrid model of the at least one known constituent or property in the set of samples.

US 6,341,258 B1

SHAKING TEST APPARATUS AND METHOD FOR STRUCTURES

Masahiko Inoue, Chiyoda; Toshihiko Horiuchi; Yasuyuki Momoi, both of Ushiku; Takao Konno, Minori, and Wataru Yamagishi, Abiko, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

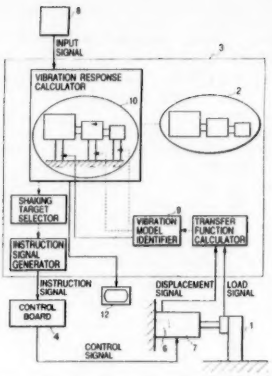
Filed Mar. 15, 2000, Appl. No. 526,207

Claims priority, application Japan, Mar. 15, 1999, 11-067841

Int. Cl. G01M *7/02*

U.S. Cl. 702—56 **10 Claims**

1. A shaking test apparatus for carrying out a shaking test on a structure by using a partial structure and a numerical model which is virtually connected to the partial structure, comprising:



a shaking device for shaking the partial structure;

a displacement detector for detecting the displacement of the partial structure being shaken by said shaking device;

a load detector for detecting a reaction force from the partial structure; and

a computer for identifying the vibration model corresponding to the partial structure on the basis of the displacement and the reaction force thus detected combining the vibration model and the numerical model with each other to construct a model of the overall system corresponding to the structure and calculate the shaking response of the overall-system model.

US 6,341,259 B1

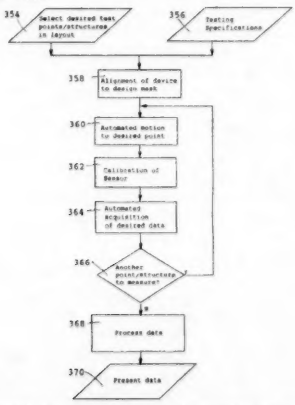
MICROSYSTEMS INTEGRATED TESTING AND CHARACTERIZATION SYSTEM AND METHOD

Adolfo O. Gutierrez, Troy; Steven C. Aceto, Wynantskill, and Michelle D. Simkulet, Cohoes, all of N.Y., assignors to Inter-Science, Inc., Troy, N.Y.

Filed Jun. 4, 1999, Appl. No. 326,075

Int. Cl. G02B *6/00*

U.S. Cl. 702—117 **23 Claims**



12. A method for testing a microelectronic device under test, comprising the steps of:

providing device design information comprising layout information about said device under test;

specifying at least one location to be tested of said device under test using testing locations information, using testing locations information;

specifying a testing sequence comprising at least one testing step to be applied to said device under test at said at least one location to be tested, using testing parameters information;

acquiring raw test data pertaining to said device under test in accordance with said testing sequence, using a sensor;

navigating said sensor relative to said device under test and controlling relative motion and orientation between said sensor and said device under test, based upon relating said testing locations information to said device design information, using motion control means;

applying the specified steps of the specified testing sequence to said device under test at the specified locations to be tested, based upon relating said device design information, said testing locations information and said testing parameters information to one another, and using said sensor and said motion control means, using controller means.

US 6,341,260 B2

END-TO-END RESPONSE TIME MEASUREMENT FOR COMPUTER PROGRAMS USING STARTING AND ENDING QUEUES

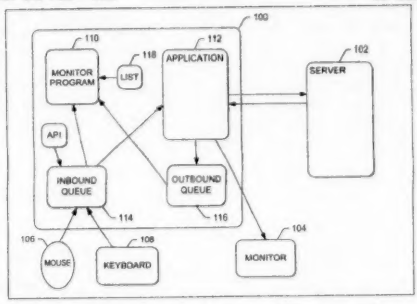
Paul F. Klein, Thousand Oaks, Calif., and Raymond P. Ammerman, III, Raleigh, N.C., assignors to Candle Distributed Solutions, Inc., El Segundo, Calif.

Continuation of application No. 09/428,271, filed on Oct. 27, 1999, now Pat. No. 6,202,036, which is a continuation of application No. 08/899,195, filed on Jul. 23, 1997, now Pat. No. 5,991,705. This application Jan. 17, 2001, Appl. No. 761,904.

This patent is subject to a terminal disclaimer.

Int. Cl. G04F *10/00*

U.S. Cl. 702—186 **18 Claims**



7. A computerized apparatus for measuring end-to-end response time for a transaction performed by a computer, comprising:

a monitoring application executing on a computer, wherein the monitoring application is configured to register an interest in seeing messages from and to a given application on a computer;

an inbound message queue for messages transmitted to the given application;

an outbound message queue for messages transmitted from the given application;

a start time obtained by the monitoring application when a first message is received at the inbound message queue;

a stop time obtained by the monitoring application when a second message is received at the outbound message queue; and

an end-to-end response time obtained by the monitoring application by determining the difference between the start time and the stop time.

US 6,341,261 B1
KNOWLEDGE DRIVEN COMPOSITE DESIGN OPTIMIZATION PROCESS AND SYSTEM THEREFOR

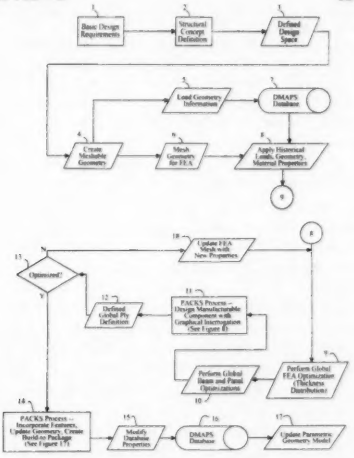
Virginia M. Vasey-Glandon, Florissant; Richard D. Hale, St. Louis, and Jeffrey J. Schmitz, St. Charles, all of Mo., assignors to McDonnell Douglas Corp., St. Louis, Mo.

Continuation of application No. 08/854,687, filed on May 12, 1997, now Pat. No. 5,984,511. This application Nov. 15, 1999, Appl. No. 440,586.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *17/50*

U.S. Cl. 703—6 **12 Claims**


Basic Design Requirements
Structural Concept Definition
Defined Design Space
Load Geometry Information
DMAPS Database
Create Meshable Geometry
Mesh Geometry for FEA
Apply Historical Loads, Geometry, Material Properties
Update FEA Mesh with New Properties
Optimized?
Defined Global Ply Definition
PACKS Process – Design Manufacturable Component with Graphical Interrogation (See Figure 8)
Perform Global Basis and Panel Optimizations
Perform Global FEA Optimization (Thickness Distribution)
PACKS Process – Incorporate Features, Update Geometry, Create Build-to Package (See Figure 19)
Modify Database Properties
DMAPS Database
Update Parametric Geometry Model

1. A knowledge driven composite design optimization process for designing a laminate part comprising steps for:

generating a globally optimized 3-D ply definition for a laminate part, said generating step further comprising steps for:

(1) determining connectivity between a plurality of regions defining the laminate part;

(2) subsequently generating ramp features detailing interconnection of the regions defining the laminate part;

(3) displaying views and corresponding tabular data describing the laminate part and illustrating both inter-region connectivity and the ramp features as specified by a user; and

(4) optimizing local stacking sequences; and

subsequently modifying the 3-D ply definition to include features of the laminate part, wherein said generating and modifying steps are parametrically linked to one another.

US 6,341,262 B1
OPTIMISTIC DISTRIBUTED SIMULATION BASED ON TRANSITIVE DEPENDENCY TRACKING

Om P. Damani; Vijay K. Garg, both of Austin, Tex., and Yi-Min Wang, Bellevue, Wash., assignors to AT&T, New York, N.Y.

Continuation of application No. 09/059,042, filed on Apr. 13, 1998, now Pat. No. 6,031,987, Provisional application No. 60/045,755, filed on May 6, 1997. This application Dec. 7, 1999, Appl. No. 456,216.

This patent is subject to a terminal disclaimer.

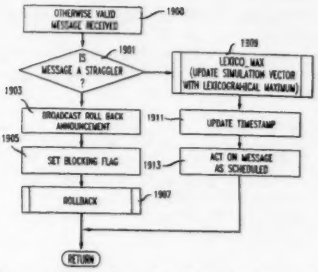
Int. Cl. G06F *9/44*

U.S. Cl. 703—16 **3 Claims**

1. A method for performing event driven simulation comprising:

exchanging messages between logical processes to advance a simulation state;

maintaining a log at each said logical process, the log including past rollback information on each logical process; and



appending rollback information from the log to each of the messages.

US 6,341,263 B1
SPEECH RECOGNITION APPARATUS, METHOD AND STORAGE MEDIUM THEREOF

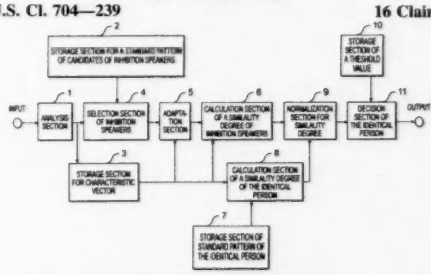
Eiko Yamada, and Hiroaki Hattori, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 17, 1999, Appl. No. 312,886

Claims priority, application Japan, May 15, 1998, 10-132788

Int. Cl. G01L *15/00*

U.S. Cl. 704—239 **16 Claims**


STORAGE SECTION FOR A STANDARD PATTERN OF CANDIDATES OF INHIBITION SPEAKERS
STORAGE SECTION OF A THESHOLD VALUE
INPUT
ANALYSIS SECTION
SELECTION SECTION OF INHIBITION SPEAKERS
ADAPTATION SECTION
CALCULATION SECTION OF A SIMILARITY DEGREE OF INHIBITION SPEAKERS
NORMALIZATION SECTION FOR SIMILARITY DEGREE
DECISION SECTION OF THE IDENTICAL PERSON
OUTPUT
STORAGE SECTION FOR CHARACTERISTIC VECTOR
CALCULATION SECTION OF A SIMILARITY DEGREE OF THE IDENTICAL PERSON
STORAGE SECTION OF STANDARD PATTERN OF THE IDENTICAL PERSON

1. A speech recognition apparatus comprising:

an analysis section for converting an inputted voice data for collation to a characteristic vector,

a storage section of the characteristic vector for storing the characteristic vector converted in said analysis section,

a storage section of a standard pattern of candidates of inhibition speakers in which one or more standard patterns of candidates of inhibition speakers have been stored,

a selection section for selecting at least one inhibition speaker by calculating similarity degree between the characteristic vector converted in said analysis section and the standard patterns of respective speakers stored in said storage section of the standard pattern of candidates of inhibition speakers,

an adaptation section for adapting the standard patterns of inhibition speakers by acquiring a mapping function from a characteristic vector space of a voice of a inhibition speaker to a characteristic vector space of an inputted voice by using the mapping function acquired, using the standard pattern of inhibition speakers selected in said selection section to select a inhibition speaker and the characteristic vector stored in said storage section for the characteristic vector,

a calculation section of a similarity degree of inhibition speakers for calculating the similarity degree between a characteristic vector stored in said storage section of characteristic vector and the standard pattern of inhibition speakers adapted in said adaptation section,

a storage section of the standard pattern of the identical person in which the registered standard pattern of the identical person has been stored,

a calculation section of a similarity degree to the identical person for calculating the similarity degree between of the characteristic vector stored in said storage section for the

characteristic vector and the standard pattern of the identical person stored in said storage section of the standard pattern of the identical person,

a normalization section of the similarity degree for normalizing the similarity degree by using the similarity degree calculated in said calculation section of a similarity degree to the identical person and the similarity degree calculated in said calculation section of a similarity degree of inhibition speakers,

a threshold value storage section for storing a threshold value previously determined, and

a decision section for deciding the person by using the similarity degree normalized in said normalization section of the similarity degree and the threshold value stored in said storage section storing a threshold value.

US 6,341,264 B1

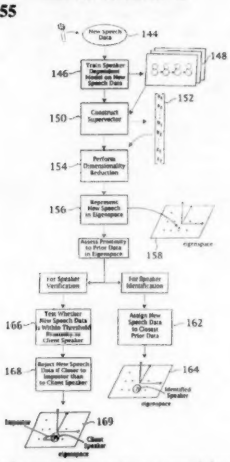
ADAPTATION SYSTEM AND METHOD FOR E-COMMERCE AND V-COMMERCE APPLICATIONS

Roland Kuhn, and Jean-Claude Junqua, both of Santa Barbara, Calif., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 25, 1999, Appl. No. 258,113

Int. Cl. G10L *15/28*

U.S. Cl. 704—255 **16 Claims**



1. An automated commerce system, comprising:

a data store containing a representation of a priori knowledge about a speaker population;

a transaction processor for effecting an electronic commerce operation;

a speech recognizer employing a set of initial speech models for converting input speech from a user into words usable by said transaction processor; and

model adaptation system that uses said input speech and said representation of speaker population to adapt said initial speech models and thereby create speaker dependent models specifically adapted for said user.

US 6,341,265 B1

PROVIDER CLAIM EDITING AND SETTLEMENT SYSTEM

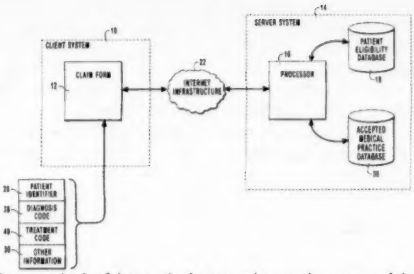
Wayne A. Provost, Salt Lake City, Utah; Vaughn C. Cecil, Crossville, Tenn.; John W. Kwant, Jr., Midvale, and Brian E. Peterson, Salt Lake City, both of Utah, assignors to P5 e.Health Services, Inc., Salt Lake City, Utah

Filed Dec. 3, 1998, Appl. No. 204,886

Int. Cl. G06F *17/60*

U.S. Cl. 705—4 **27 Claims**

1. In a system comprising a client computer and a remote server computer connected to the client computer by a communication



link, a method of interactively preparing an insurance claim in preparation for a health care provider to perform health care services, the method comprising the steps of:

entering, by a health care provider, a diagnosis code and a treatment code to a computer-displayable claim form displayed by the client computer;

transmitting the diagnosis code and the treatment code from the client computer to the remote server computer prior to the health care provider performing health care services;

determining, at a processor associated with the remote server computer, that the diagnosis code and the treatment code do not correspond to health care services that are approved for payment;

transmitting information from the remote server computer to the client computer, the information indicating to the health care provider that the diagnosis code and the treatment code do not correspond to health care services that are approved for payment prior to the health care provider performing the health care services; and

transmitting, from the remote server computer to the client computer, a suggested revised treatment code prior to the health care provider performing the health care services, such that the treatment associated with the revised treatment code can be included in the health care services when the health care services are performed by the health care provider.

US 6,341,266 B1

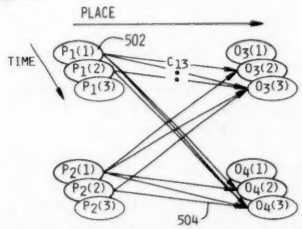
METHOD AND SYSTEM FOR THE MAXIMIZATION OF THE RANGE OF COVERAGE PROFILES IN INVENTORY MANAGEMENT

Heinrich Braun, Karlsruhe, Germany, assignor to SAP Aktiengesellschaft, Germany

Provisional application No. 60/089,996, filed on Jun. 19, 1998. This application Dec. 3, 1998, Appl. No. 204,772.

Int. Cl. G06F *17/60*

U.S. Cl. 705—7 **4 Claims**



1. A method for maximizing a range of coverage profiles for managing inventory comprising the steps of:

a. providing a function for a range of coverage profile;

b. initializing said range of coverage profile function with a starting value;

C. calculating an optimal amount of inventory to fulfill said function for a range of coverage profile wherein said calculating comprises the steps of:

i. applying a minimum-cost flow algorithm to construct an optimal transportation solution to transport said necessary amount of inventory;

ii. determining whether a solution is found after said applying of said minimum-cost flow algorithm for said range of coverage profile function with said starting value;

iii. incrementally lowering said starting value when said determining whether a solution is found yields no solution and repeating said computing an optimal solution until said computing an optimal solution results in an optimal solution for said minimum-cost flow algorithm;

d. incrementally enlarging said starting value when said determining whether a solution is found yields a solution and repeating said computing a solution until said computing an optimal solution results in an optimal solution for said minimum-cost flow algorithm;

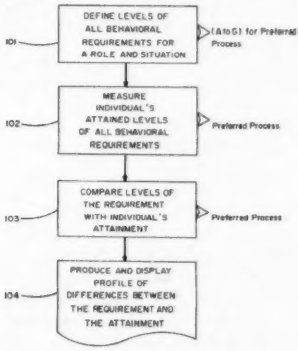
e. managing inventory based upon said optimal solution.

US 6,341,267 B1

METHODS, SYSTEMS AND APPARATUSES FOR MATCHING INDIVIDUALS WITH BEHAVIORAL REQUIREMENTS AND FOR MANAGING PROVIDERS OF SERVICES TO EVALUATE OR INCREASE INDIVIDUALS' BEHAVIORAL CAPABILITIES

Herman P. Taub, Westport, Conn., assignor to Enhancement of Human Potential, Inc., Fairfield, Conn.

Filed Jul. 2, 1997, Appl. No. 886,968
Int. Cl. G06F *17/60*
U.S. Cl. 705—11 **24 Claims**


DEFINE LEVELS OF ALL BEHAVIORAL REQUIREMENTS FOR A ROLE AND SITUATION
101
(A to G) for Preferred Process
MEASURE INDIVIDUAL'S ATTAINED LEVELS OF ALL BEHAVIORAL REQUIREMENTS
102
Preferred Process
COMPARE LEVELS OF THE REQUIREMENT WITH INDIVIDUAL'S ATTAINMENT
103
Preferred Process
PRODUCE AND DISPLAY PROFILE OF DIFFERENCES BETWEEN THE REQUIREMENT AND THE ATTAINMENT
104

1. A computerized process for evaluating an individual's behavioral capabilities for a particular role and situation, comprising:

specifying one or more tasks, each with associated one or more outcomes, required for the individual to meet criteria of desired performance in the particular role and situation;

specifying one or more techniques that may be used to accomplish the required one or more tasks so as to attain all the associated one or more outcomes;

specifying a set of one or more abilities necessary and sufficient to carry out the one or more techniques and to accomplish the one or more required tasks;

obtaining the individual's attainment of ability or abilities;

comparing the set of one or more necessary and sufficient abilities with the attained ability or abilities of the individual; and

evaluating appropriateness of matching the individual and the particular role and situation together by the comparing;

wherein the specified set of one or more necessary and sufficient abilities comprises cognitive ability, affective ability, physiological ability, strategic ability, aesthetic ability, ethical ability, spiritual ability, or any combination thereof; and wherein:

the spiritual ability has as prerequisites the cognitive ability, the affective ability, the physiological ability, the strategic ability, the aesthetic ability, and the ethical ability;

the ethical ability has as prerequisites the cognitive ability, the affective ability, the physiological ability, the strategic ability and the aesthetic ability;

the aesthetic ability has as prerequisites the cognitive ability, the affective ability, the physiological ability and the strategic ability;

the strategic ability has as prerequisites the cognitive ability, the affective ability and the physiological ability;

the physiological ability has as prerequisites the cognitive ability and the affective ability; and

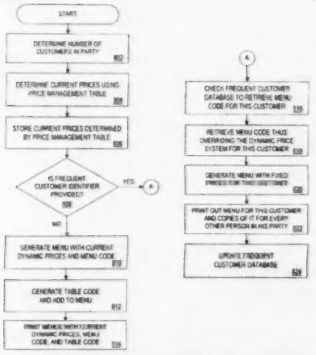
the affective ability has as a prerequisite the cognitive ability.

US 6,341,268 B2

SYSTEM AND METHOD PROVIDING A RESTAURANT MENU DYNAMICALLY GENERATED BASED ON REVENUE MANAGEMENT INFORMATION

Jay S. Walker, Ridgefield; Andrew S. Van Luchene, Norwalk; James A. Jorasch, Stamford, all of Conn., and Keith Bemer, New York, N.Y., assignors to Walker Digital, LLC, Stamford, Conn.

Filed Dec. 23, 1998, Appl. No. 219,220
Int. Cl. G06F *17/60*
U.S. Cl. 705—15 **15 Claims**


START
DETERMINE NUMBER OF CUSTOMERS IN PARTY
602
DETERMINE CURRENT PRICES USING PRICE MANAGEMENT TABLE
604
STORE CURRENT PRICES DETERMINED BY PRICE MANAGEMENT TABLE
606
IS FREQUENT CUSTOMER IDENTIFIER PROVIDED?
608
YES
A
NO
GENERATE MENU WITH CURRENT DYNAMIC PRICES AND MENU CODE
610
GENERATE TABLE CODE AND ADD TO MENU
612
PRINT MENUS WITH CURRENT DYNAMIC PRICES, MENU CODE, AND TABLE CODE
614
A
CHECK FREQUENT CUSTOMER DATABASE TO RETRIEVE MENU CODE FOR THIS CUSTOMER
616
RETRIEVE MENU CODE THUS OVERRIDING THE DYNAMIC PRICE SYSTEM FOR THIS CUSTOMER
618
GENERATE MENU WITH FIXED PRICES FOR THAT CUSTOMER
620
PRINT OUT MENU FOR THIS CUSTOMER AND COPIES OF IT FOR EVERY OTHER PERSON IN HIS PARTY
622
UPDATE FREQUENT CUSTOMER DATABASE
624

1. A method for dynamically generating a menu, comprising:

(a) automatically determining a price associated with a menu item based at least partly on revenue management information;

(b) receiving a request for a menu; and

(c) generating a menu, including the automatically determined price, in response to the request for a menu;

wherein the automatically determined price associated with the menu item is further based at least partly on information related to a customer associated with the request for a menu.

US 6,341,269 B1

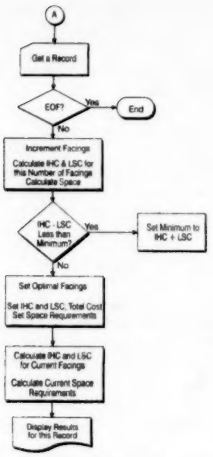
SYSTEM, METHOD AND ARTICLE OF MANUFACTURE TO OPTIMIZE INVENTORY AND MERCHANDISING SHELF SPACE UTILIZATION

Earl F. Dulaney, and Matthew A. Waller, both of Fayetteville, Ark., assignors to Mercani Technologies, Inc., Fayetteville, Ak.

Provisional application No. 60/117,749, filed on Jan. 26, 1999. This application Dec. 30, 1999, Appl. No. 475,612.
Int. Cl. G06F *17/60*
U.S. Cl. 705—22 **16 Claims**

1. An inventory optimization method to enable a user to select products for a space, said method comprising:

determining at least one optimization analysis objective;



communicating operationally dependent information about various products and importing said operationally dependent information to an inventory database;

identifying a subset of data elements within said database on which to perform an optimization analysis and communicating said subset of data elements to an optimizing computer;

performing an optimization analysis upon said subset of data elements using said optimizing computer to thereby obtain an unconstrained report and a constrained report; and,

providing said reports to a user to enable the user to select products for the space.

US 6,341,270 B1

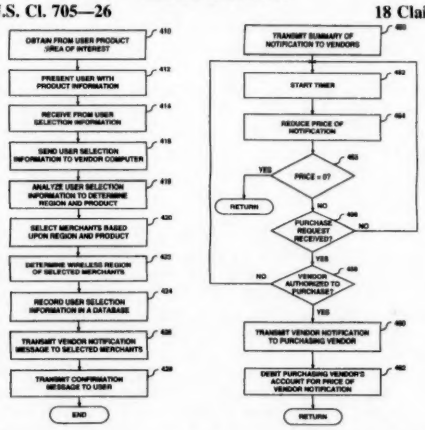
METHOD FOR PROVIDING VENDOR NOTIFICATION MARKETING IN AN ELECTRONIC COMMERCE NETWORK ENVIRONMENT

Augustine N. Esposito, and Gregg Garrett, both of Scottsdale, Ariz., assignors to Aether Systems, Inc., Del.

Provisional application No. 60/107,785, filed on Nov. 10, 1998. This application Jan. 25, 1999, Appl. No. 236,510.

Int. Cl. G06F *17/60*

U.S. Cl. 705—26 **18 Claims**


OBTAIN FROM USER PRODUCT AREA OF INTEREST
PRESENT USER WITH PRODUCT INFORMATION
RECEIVE FROM USER SELECTION INFORMATION
SEND USER SELECTION INFORMATION TO VENDOR COMPUTER
ANALYZE USER SELECTION INFORMATION TO DETERMINE REGION AND PRODUCT
SELECT MERCHANTS BASED UPON REGION AND PRODUCT
DETERMINE WIRELESS REGION OF SELECTED MERCHANTS
RECORD USER SELECTION INFORMATION IN A DATABASE
TRANSMIT VENDOR NOTIFICATION MESSAGE TO SELECTED MERCHANTS
TRANSMIT CONFIRMATION MESSAGE TO USER
END
TRANSMIT SUMMARY OF NOTIFICATION TO VENDORS
START TIMER
REDUCE PRICE OF NOTIFICATION
PRICE = 0?
YES
NO
RETURN
PURCHASE REQUEST RECEIVED?
NO
YES
VENDOR AUTHORIZED TO PURCHASE?
NO
YES
TRANSMIT VENDOR NOTIFICATION TO PURCHASING VENDOR
DEBIT PURCHASING VENDOR'S ACCOUNT FOR PRICE OF VENDOR NOTIFICATION
RETURN

1. A method for automatically determining a purchase price for a real-time notification of purchaser requirements in a heterogeneous network environment, said heterogeneous network environment having a public packet switched network and a wireless network, said heterogeneous network environment comprising:

a plurality of wireless terminals in communications with said wireless network to receive said real-time notification of purchaser requirements;

at least one vendor computer, said vendor computer having at least one of a plurality of databases;

a plurality of client computers, said client computers and said vendor computer being interconnected by said public packet switched communications network to cause a purchase request to be transmitted to said vendor computer over said public packet switched communications network;

said vendor computer being operatively disposed to analyze said purchase request to select from said product database a plurality of selected vendors;

said vendor computer being operatively disposed to determine account information associated with each of the said plurality of selected vendors, to cause a message to be transmitted into said wireless network external to said public packet switched communications network, in order to provide said real time notification to said plurality of selected vendors;

said method comprises the steps:

transmitting a summary of said vendor notification and an initial value of a notification purchase price to said plurality of selected vendors;

starting a timer to track time lapse, thereupon reducing said starting notification purchase price by a selectable amount at successive intervals measured by said time lapse;

receiving from at least one of said plurality of selected vendors a vendor notification purchase request message;

determining said purchasing vendor's authorization to purchase said vendor notification, based on vendor profile information;

if said purchasing vendor is authorized to purchase said vendor notification, then transmitting said vendor notification to said purchasing vendor; and

debiting an account associated with said purchasing vendor for said specific notification purchase price.

US 6,341,271 B1

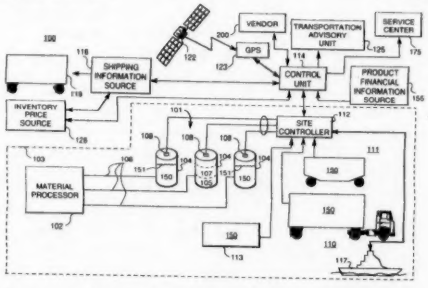
INVENTORY MANAGEMENT SYSTEM AND METHOD

Joseph James Salvo, Schenectady; Patricia Denise Mackenzie, Clifton Park; Janet Sue Bennett, Scotia; Heather Ann Relyea, Niskayuna, and Thomas Anthony Morelli, II, Stephentown, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1998, Appl. No. 191,910

Int. Cl. G06F *17/60*

U.S. Cl. 705—28 **71 Claims**



1. A network-based inventory management system that automatically provides information concerning inventory amounts and decides replacement inventory ordering, the system comprising a network-based machine-initiated and executed system comprising:

at least one storage receptacle that stores inventory;

at least one indicator that automatically determines an inventory amount in each receptacle, each indicator generating inventory amount signals representative of the inventory amount in the receptacle;

at least one inventory price source that provides inventory price information from at least one inventory vendor; and

a control unit that receives the inventory amount signals from the indicator and inventory price information from the inventory price source,

wherein the control unit automatically analyzes the inventory amount signals to determine inventory amounts in the receptacle, the control unit is capable of automatically integrating the inventory amounts and inventory price information to decide if an inventory order should be placed; and

wherein the indicator, the inventory price source, and the control unit communicate with each other within a network.

US 6,341,272 B1

BUSINESS SERVICE PLATFORM, NETWORK, AND SYSTEM

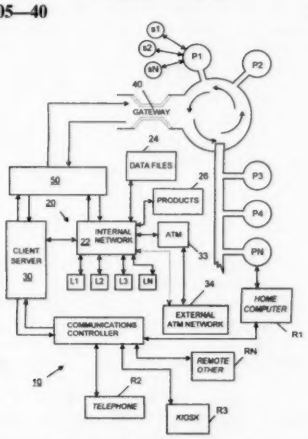
William M. Randle, Bexley, Ohio, assignor to Huntington Bancshares Incorporated

Continuation of application No. 09/104,576, filed on Jun. 25, 1998, now Pat. No. 5,899,982, which is a continuation of application No. 08/523,692, filed on Sep. 5, 1995, now Pat. No. 5,774,663, and a continuation of application No. 08/401,075, filed on Mar. 8, 1995, now Pat. No. 5,787,403. This application Apr. 12, 1999, Appl. No. 291,137.

This patent is subject to a terminal disclaimer.

Int. Cl. B42D *14/00*

U.S. Cl. 705—40 **37 Claims**



1. A service platform that enables access by a customer at a remote location to information, products, and services of a business accessible through a central information processor and to a customer service representative by a video connection through a network communication link comprising:

a central information processor at a central location, said processor including data storage files relating to customers and accounts as the business maintains these files in the ordinary course and categories of information, products, and services conventionally offered by the business;

an access gateway interconnected to said central information processor;

a client server operatively interconnected to communicate with a customer operable transceiver at a remote location, said client server enabling live video from the business to the customer substantially simultaneously with real-time data transmission between the customer operable transceiver and said central information processor through said client server, said client server processing communications to and from the customer operable transceiver, and enabling the customer using the transceiver to access and control items in, and perform transactions with respect to, information, products, and services of the business in said data storage files of said central information processor, and in which said client server is interconnected with a plurality of customer service stations capable of interconnection with the customer operable transceiver in response to a request for video connection received from the customer operable transceiver, said client server monitoring each of said customer service stations with regard to whether said customer service stations are connected with a customer operable transceiver and whether the customer service representatives at the customer service stations are available, the client server, upon receipt of the video connection request from the customer operable transceiver processes the requests received, dependent upon the availability of a customer service representative from among the plurality, according to a sequence of (a) direct connection to an available customer service representative and (b) hold, (c) queue and (d) transfer to a next available customer service representative whereby upon the customer service representative's receipt of a signal processed by said client server, the customer service representative initiates a video connection with the customer.

US 6,341,273 B1

ELECTRONIC COIN STICK WITH POTENTIAL FOR FUTURE ADDED VALUE

Robert J Briscoe, Suffolk, United Kingdom, assignor to British Telecommunications public limited company, London, United Kingdom

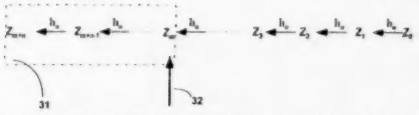
PCT No. PCT/GB98/00883, § 371 Date Apr. 29, 1998, § 102(e) Date Apr. 29, 1998, PCT Pub. No. WO98/43211, PCT Pub. Date Oct. 1, 1998

PCT Filed Mar. 23, 1998, Appl. No. 66,337

Claims priority, application European Pat. Off., Mar. 26, 1997, 97302098

Int. Cl. G06F *17/60;* **H04K** *1/00;* **H04L** *9/00*

U.S. Cl. 705—41 **26 Claims**



1. A method of operating a digital payment transaction system comprising:

a) at a first party, generating a secret number;

b) storing at the first party the secret number;

c) generating at the first party a first hash chain of values which are derived from the secret number by successive operations of a hash function;

d) communicating to a second party a digitally encoded value from the chain of hash values subsequent to the first value;

e) generating at the second party a second hash chain of values which are derived from the value communicated by the first party in step (d);

f) communicating digitally encoded values from said second hash chain to a third party in payment; and

g) subsequently communicating to the second party from the first party a monetary value represented by a value in said hash chain which precedes the value originally communicated in step (d).

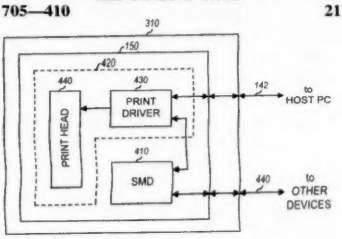
US 6,341,274 B1
METHOD AND APPARATUS FOR OPERATING A SECURE METERING DEVICE

J P Leon, San Carlos, Calif., assignor to Neopost Inc., Hayward, Calif.

Continuation of application No. 09/250,990, filed on Feb. 16, 1999, Provisional application No. 60/093,849, filed on Jul. 22, 1998, Provisional application No. 60/094,065, filed on Jul. 24, 1998, Provisional application No. 60/094,073, filed on Jul. 24, 1998, Provisional application No. 60/094,116, filed on Jul. 24, 1998, Provisional application No. 60/094,120, filed on Jul. 24, 1998, Provisional application No. 60/094,122, filed on Jul. 24, 1998, Provisional application No. 60/094,127, filed on Jul. 24, 1998. This application Jul. 21, 1999, Appl. No. 359,158.

Int. Cl. G07B *17/00*

U.S. Cl. 705—410 **21 Claims**



1. A postage metering system, comprising:

a computer having an interface to receive postage information;

a docking station coupled to the computer; and

a postage metering device operatively coupled to the computer via the docking station, the postage metering device including a secure metering device (SMD) configured to store accounting information, wherein:

the postage metering device is removably coupled to the docking station,

the postage metering device is characterized at least by a docked operating mode and an undocked operating mode, the docked operating mode corresponding to the postage metering device being coupled to the computer and the undocked operating mode corresponding to the postage metering device being uncoupled from the computer,

funding of the postage metering device is performed in the docked operating mode, and

the postage metering device is configured to print indicia having a predetermined value when operating in the undocked operating mode.

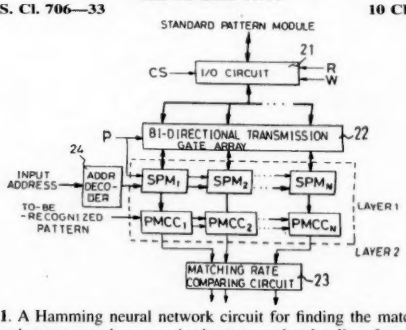
US 6,341,275 B1
PROGRAMMABLE AND EXPANDABLE HAMMING NEURAL NETWORK CIRCUIT

Bingxue Shi, and Gu Lin, both of Beijing, China, assignors to Winbond Electrnics Corp., Taiwan

Filed Apr. 27, 1999, Appl. No. 300,117

Int. Cl. G06F *15/18*

U.S. Cl. 706—33 **10 Claims**



1. A Hamming neural network circuit for finding the matching rates between a to-be-recognized pattern and a plurality of standard patterns, comprising:

an I/O circuit enabled by a chip select signal for inputting and outputting said plurality of standard patterns;

a bi-directional transmission ate array connected to said I/O circuit and controlled by a programming signal;

a plurality of standard pattern memory units for storing said plurality of standard patterns respectively, each connected to said bi-directional transmission gate array;

an address decoder connected to said plurality of standard pattern memory units for addressing said plurality of standard pattern memory units;

a plurality of pattern matching calculation circuit units respectively connected to said plurality of standard pattern memory units, each receiving said to-be-recognized patterns, and generating a plurality of matching rates between said to-be-recognized pattern and said plurality of standard patterns; and

an expandable matching rate comparing circuit having a plurality of inputs respectively connected to said plurality of pattern matching calculation circuits and having a plurality of outputs respectively corresponding to said plurality of inputs for comparing and sorting said plurality of matching rates to sequentially present a plurality of high voltage pulses on said plurality of outputs in order of magnitude of the matching rate.

US 6,341,276 B1
SYSTEM FOR SELECTING A COMPUTER SOLUTION FROM A PRE-DEFINED SET

Craig Samuel Bender, and John James Shedletsky, both of Brewster, N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Mar. 1, 1995, Appl. No. 397,292

Int. Cl. G06N *5/04*

U.S. Cl. 706—50 **18 Claims**

1. An expert system for determining a computer solution, said system comprising:

means for storing descriptions or diagrams of a set of respective pre-defined computer solutions, each of said computer solutions comprising a front end platform, a back-end platform and a commution linking said platforms together;

means for directing display of different uses of said computer solutions; and

means, responsive to user selection of one or more of said uses for identifying a subset of said computer solutions corresponding to the selected uses.

US 6,341,277 B1
SYSTEM AND METHOD FOR PERFORMANCE COMPLEX HETEROGENEOUS DATABASE QUERIES USING A SINGLE SQL EXPRESSION

Anna Rosa Coden, Bronx; JoAnn Piersa Brereton, Hawthorne, and Michael Stephen Schwartz, Bronx, all of N.Y., assignors to *International Business Machines Corporation*, Armonk, N.Y.

Provisional application No. 60/108,754, filed on Nov. 17, 1998. This application Apr. 9, 1999, Appl. No. 289,020.

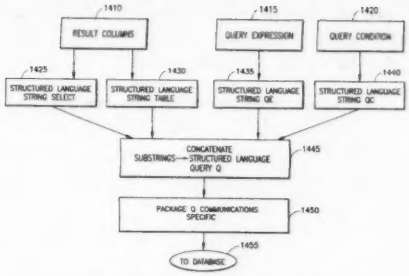
Int. Cl. G06F *17/30*

U.S. Cl. 707—2 **18 Claims**

1. A computer system having one or more central processing units, one or more memories, and one or more databases, the computer system further comprising:

one or more query objects created by a client process, the query objects having one or more sub-query objects and one or more execute methods that are capable of operating on their respective query object to produce one or more query expressions, all of the execute methods capable of producing the respective query expression that is compatible with a structured query language; and

a compound query containing one or more boolean expressions of one or more of the query objects, the compound query having one or more compound execute methods which invoke one or more of the execute methods of each of the query objects, each of the execute methods returning their respective



query expression, the compound execute method using one or more common table expressions to combine the query expressions to form a single compound query expression that represents the boolean expression and can be executed against a database to return a result without executing any of the query expressions against the database individually.

US 6,341,278 B1

RECORDING AND REPRODUCING APPARATUS AND METHOD FOR ACCESSING DATA STORED ON A RANDOMLY ACCESSIBLE RECORDING MEDIUM, AND FOR MANAGING DATA THEREON

Tsutomu Yamamoto, and Hiroyuki Fujita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

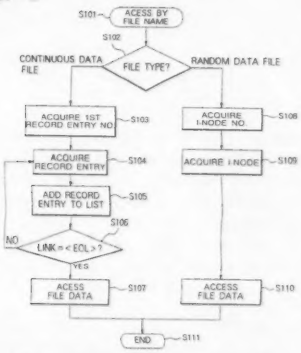
Continuation of application No. 09/219,831, filed on Dec. 23, 1998, which is a continuation of application No. 08/976,983, filed on Nov. 24, 1997, now Pat. No. 5,897,631, which is a continuation of application No. 08/548,982, filed on Oct. 27, 1995, now Pat. No. 5,740,435. This application May 11, 2000, Appl. No. 568,713.

Claims priority, application Japan, Oct. 31, 1994, 6-226419; Oct. 31, 1994, 6-266634; Oct. 31, 1994, 6-267680

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *17/30*

U.S. Cl. 707—2 **4 Claims**



1. A recording and reproducing apparatus for recording and reproducing a data file recorded on a randomly accessible recording medium, comprising:

recording and reproducing means for recording the data file in one or more variable length recording blocks on the recording medium, and for reproducing the data file from the recording medium; and

a memory for storing a file entry and a record entry of the data file recorded on the recording medium, the file entry including name data representing the file name of the data file recorded on the recording medium and identification data representing the record entry of the first block of the data file, the record entry including head position data representing the head position of the data file on the recording medium and recording continuation length data representing a recording continuation length of the data file on the recording medium, wherein said recording and reproducing means reproduces the data file in accordance with the file entry and the record entry stored in the memory.

US 6,341,279 B1

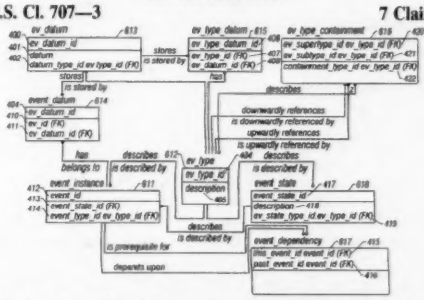
METHOD AND APPARATUS FOR EVENT MODELING

Jeff Nye, Bellevue, Wash., assignor to Starwave Corporation, Bellevue, Wash.

Filed Oct. 12, 1998, Appl. No. 170,026

Int. Cl. G06F *17/30*

U.S. Cl. 707—3 **7 Claims**



1. A method of modeling an event comprising the steps of:

entering at least one record into a database;

associating a state with said at least one record, said state representing a status of said at least one record;

defining a plurality of events, wherein said plurality of events contain dependency logic interrelating said plurality of events;

defining at least one event type associated with at least one of said plurality of events, wherein said at least one event type comprises a label supplying a relationship between at least one of said plurality of events and an event metamodel;

defining an event model comprising at least one of said plurality of events and at least one of said event types;

defining said event metamodel comprising at least one said event model; and, changing said state of said at least one record, in response to a change of said status of said at least one record, using said event metamodel.

US 6,341,280 B1

INLINE TREE FILTERS

Bryce Alan Glass, San Francisco, and Paige K. Parsons, Atherton, both of Calif., assignors to Netscape Communications Corporation, Mountain View, Calif.

Filed Oct. 30, 1998, Appl. No. 183,863

Int. Cl. G06F *17/30*

U.S. Cl. 707—3 **20 Claims**

3. An apparatus for selectively structuring data represented in a hierarchical tree format, comprising;

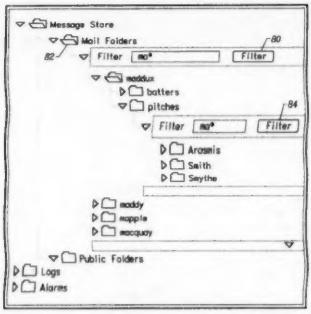
a tree viewer for hierarchically representing on a display device data stored in electronic format by a data processing system; and

at least one inline tree filter for enabling selective data display without altering behavior and interaction of said tree viewer, said one inline tree filter comprising an arbitrary search mechanism embedded within said tree viewer;

means for determining what filter criteria a user has entered into an at least one inline tree filter text field;

means for traversing through said data;

means for showing only the data that match said filter criteria;



wherein one or more inline tree filters may be embedded directly into any portion of said tree viewer; and

wherein a selective set of objects is affected by said inline tree filter.

US 6,341,281 B1

DATABASE SYSTEM WITH METHODS FOR OPTIMIZING PERFORMANCE OF CORRELATED SUBQUERIES BY REUSING INVARIANT RESULTS OF OPERATOR TREE

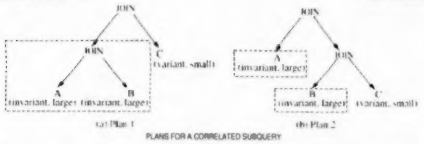
Roger Dermot MacNicol, Needham; Steven A. Kirk, Chelmsford, both of Mass.; Randall George Bello, Hampton, N.H.; Jun Rao, New York, N.Y., and Katherine Tsouya Yang, Andover, Mass., assignors to Sybase, Inc., Emeryville, Calif.

Provisional application No. 60/081,782, filed on Apr. 14, 1998.

This application Apr. 2, 1999, Appl. No. 285,408.

Int. Cl. G06F *17/30*

U.S. Cl. 707—3 **35 Claims**



PLANS FOR A CORRELATED SUBQUERY

1. In a computer system having a processor, a memory, and a storage device, said storage device storing a database comprising database tables, each table comprising rows of data records, each data record storing information in database columns, a method for executing a correlated database query for selecting particular ones of said data records, the method comprising:

(a) receiving a database query specifying selection of particular ones of said data records, said database query comprising inner and outer query blocks, said inner query block comprising a subquery nested within the database query, wherein said at least one subquery references information from said outer query block;

(b) determining at least one correlated part and at least one uncorrelated part of said subquery, wherein only said correlated part is capable of being affected by changing values of the outer query block during execution of the database query;

(c) creating a cache in said memory for at least storing a result computed for said uncorrelated part after said subquery has been executed for the first time; and

(d) executing said database query, including evaluating said expression of the subquery by:

(i) computing a result for the correlated part of said subquery,

(ii) retrieving the cached result for the uncorrelated part of said subquery, and

(iii) computing a value for said subquery by combining said computed result with said retrieved cached result.

US 6,341,282 B1

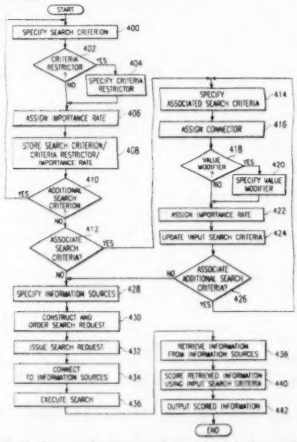
INFORMATION RETRIEVAL SYSTEM AND METHOD

Scott A. Sharpe, Port Huron; Steven J. Lundberg, Royal Oak, and William E. Bejcek, Clarkston, all of Mich., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed Apr. 19, 1999, Appl. No. 295,234

Int. Cl. G06F *17/30*

U.S. Cl. 707—3 **28 Claims**



1. A method for retrieving and scoring information from an information source, comprising:

receiving one or more search criterion;

assigning an importance rate to each of the search criterion;

generating a search request using the search criterion;

issuing the search request to the information source;

retrieving information from the information source in response to the search request; and

determining an achieved criterion score for each of the search criterion using the information retrieved from the information source and the importance rate assigned to each of the search criterion.

US 6,341,283 B1

APPARATUS FOR DATA DECOMPOSITION AND METHOD AND STORAGE MEDIUM THEREFOR

Hiroshi Yamakawa; Hiroyuki Okada, and Nobuo Watanabe, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 21, 1998, Appl. No. 216,711

Claims priority, application Japan, May 21, 1998, 10-139831

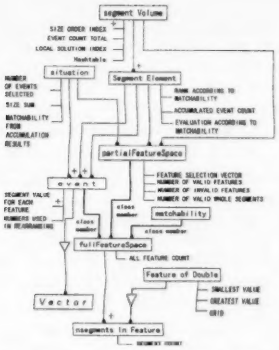
Int. Cl. G06F *7/00; 17/30*

U.S. Cl. 707—5 **36 Claims**

1. An apparatus for data decomposition that extracts partial data from whole data by selecting, with respect to each record and from data which catalog a plurality of attributes possessed by each record, a combination of each event corresponding to each record and a combination of feature quantities, which are said attributes, comprising:

a unit figuring evaluation values that become standards for ascertaining a relevance among data with respect to combinations of specific features and combinations of specific events; and

a unit extracting a plurality of partial data for which an evaluation value becomes a maximum value with respect to both changes in combinations of features and changes in combinations of events,



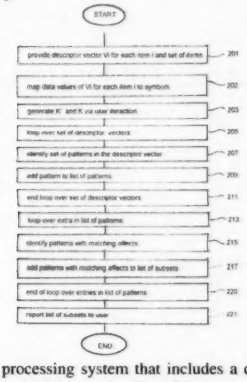
wherein the evaluation values are figured by including a selected event count, a total segment count in partial feature spaces that are to be selected, and a selected segment count in the partial feature spaces that are to be selected.

US 6,341,284 B1

METHOD AND APPARATUS FOR EXHAUSTIVE ENUMERATION OF CORRESPONDENCE IN A SET OF DESCRIPTORS

Aris Floratos; Isidore Rigoutsos, both of Astoria, and B. David Silverman, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1999, Appl. No. 473,318
Int. Cl. G06F *17/00*
U.S. Cl. 707—6 **26 Claims**


START
provide descriptor vector Vi for each item i and set of items
201
map data values of Vi for each item i to symbols
202
generate K' and K via user interaction
203
loop over set of descriptor vectors
205
identify set of patterns in the descriptor vector
207
add pattern to list of patterns
209
end loop over set of descriptor vectors
211
loop over extra in list of patterns
213
identify patterns with matching effects
215
add patterns with matching effects to list of subsets
217
end of loop over entries in list of patterns
220
report list of subsets to user
221
END

1. In a data processing system that includes a database storing information characterizing a plurality of items, a method for generating and storing data characterizing said items, the method comprising the steps of:

providing a plurality of descriptor vectors associated with said plurality of items, wherein each descriptor vector comprises an ordered series of data values associated with one of said plurality of items, wherein said ordered series of data values is logically partitioned into rows and columns, wherein a given row represents data values of a descriptor vector associated a specific item, and wherein a given column represents corresponding data values of said descriptor vectors for each item in said plurality of items;

interacting with a user to generate a first constraint K1 that represents a number of arbitrary columns;

generating data that enumerates subsets of items complexes whose corresponding data values match in the same K1' columns, wherein K1' is based upon the first constraint K1.

US 6,341,285 B1

SERIAL PROTOCOL FOR TRANSACTION EXECUTION IN MAIN-MEMORY DATABASE SYSTEMS

Stephen Michael Blott, Gillette, N.J., and Henry F. Korth, Lower Gwynedd, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 28, 1999, Appl. No. 344,849
Int. Cl. G06F *17/30*
U.S. Cl. 707—8 **16 Claims**

```
Read transaction(t):
    acquire database mutex
    begin transaction
    perform txn processing steps
    release database mutex
    acquire Q[TS(t)]
    release Q[TS(t)]
    commit (or abort) transaction
```

```
Update transaction(t):
    acquire database mutex
    begin transaction
    perform txn processing steps
    generate log records (or undo effects)
    acquire Q[TS(t)]
    release database mutex
    flush log (if committing)
    release Q[TS(t)]
    commit (or abort) transaction
```

1. A method of operating main-memory database system having at least one database containing at least one modifiable data item, comprising the steps of:

causing an update transaction to acquire a database mutex before said update transaction modifies said data item;

assigning a timestamp having an associated timestamp mutex to said update transaction;

assigning said timestamp to said data item;

causing said update transaction to acquire said timestamp mutex before said update transaction releases said database mutex;

causing said update transaction to release said database mutex before an update result is stored to a storage device; and

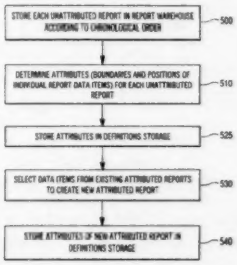
causing said update transaction to release said timestamp mutex after said update result is stored to said storage device.

US 6,341,286 B1

METHOD AND APPARATUS FOR GENERATING AND DISTRIBUTING REPORTS

Shuro Kawano, Scarsdale, N.Y., assignor to BSP International Corporation, New York, N.Y.

Provisional application No. 60/102,451, filed on Sep. 30, 1998.
This application Oct. 26, 1998, Appl. No. 179,157.
Int. Cl. G06F *17/00*
U.S. Cl. 707—101 **25 Claims**


STORE EACH UNATTRIBUTED REPORT IN REPORT WAREHOUSE ACCORDING TO CHRONOLOGICAL ORDER
500
DETERMINE ATTRIBUTES (BOUNDARIES AND POSITIONS OF INDIVIDUAL REPORT DATA ITEMS) FOR EACH UNATTRIBUTED REPORT
510
STORE ATTRIBUTES IN DEFINITIONS STORAGE
525
SELECT DATA ITEMS FROM EXISTING ATTRIBUTED REPORTS TO CREATE NEW ATTRIBUTED REPORT
530
STORE ATTRIBUTES OF NEW ATTRIBUTED REPORT IN DEFINITIONS STORAGE
540

1. A system for generating and distributing reports, wherein an unattributed report comprises report data, and wherein an attributed report comprises report data and report structure definitions, the system comprising:

a report warehouse for storing unattributed reports and attributed reports, wherein report data is generated from a database for printing or display and lacks any report structure definitions; and

means for generating attributed reports from unattributed reports and/or attributed reports.

US 6,341,287 B1

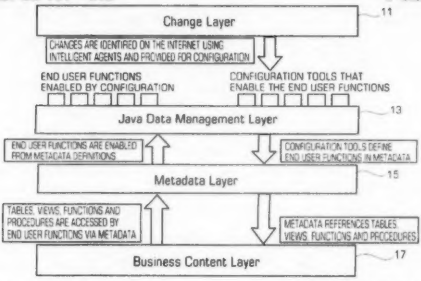
INTEGRATED CHANGE MANAGEMENT UNIT

Anthony T. Sziklai, Half Moon Bay; Ashish K. Verma, Foster City; Judith E. Popowski, Half Moon Bay; Richard Frankland, San Jose; Christopher M. Mitchell, El Granada; Joseph D. Ferguson, Santa Clara, and Douglas H. Sturgeon, San Mateo, all of Calif., assignors to Alternative Systems, Inc., Half Moon Bay, Calif.

Filed Dec. 18, 1998, Appl. No. 215,898

Int. Cl. G06F *17/00*

U.S. Cl. 707—102 **1 Claim**


Change Layer
11
CHANGES ARE IDENTIFIED ON THE INTERNET USING INTELLIGENT AGENTS AND PROVIDED FOR CONFIGURATION
END USER FUNCTIONS ENABLED BY CONFIGURATION
CONFIGURATION TOOLS THAT ENABLE THE END USER FUNCTIONS
Java Data Management Layer
13
END USER FUNCTIONS ARE ENABLED FROM METADATA DEFINITIONS
CONFIGURATION TOOLS DEFINE END USER FUNCTIONS IN METADATA
Metadata Layer
15
TABLES, VIEWS, FUNCTIONS AND PROCEDURES ARE ACCESSED BY END USER FUNCTIONS VIA METADATA
METADATA REFERENCES TABLES, VIEWS, FUNCTIONS AND PROCEDURES
Business Content Layer
17

1. A system for monitoring processing and disposition of at least one material used in a business at a facility, the system comprising:

a first database that provides product stewardship for at least one selected material that is received, created, consumed or produced as a waste product at the facility, the first data base including information on at least one product produced at the facility, information on ecological and toxicological studies performed at the facility, information for production of a Materials Safety Data Sheet (MSDS) for at least one material used at the facility, and tracking of allegations and inquiries concerning operations at the facility; and

at least one additional database, drawn from the following group of databases:

a second database that allows tracking and prevention of selected incidents involving unintended discharge of a material at the facility, the second database including information on response to at least one type of emergency at the facility, information on tracking of at least one incident at the facility, and safety information on at least one process used at the facility;

a third database that provides information on and monitoring of personnel health and safety at the facility, the third database including information on demographics of personnel working at the facility, information on personnel training, information on safety measures implemented at the facility, injuries and illnesses experienced by at least one worker at the facility, and information on industrial hygiene and occupational medicine studies carried out at the facility;

a fourth database that provides information on and monitoring of hazardous materials and hazardous waste, the fourth database including information on at least one hazardous material used at the facility, tracking of at least one waste material produced at the facility, information on at pollution prevention measures and on site remediation measures implemented at the facility;

a fifth database that tracks a controlled release or discharge of a material to the environment, the fifth database including information on discharge of at least one hazardous substance into at least one of the air, the water, the groundwater and the soil at the facility, and information on at least one toxic chemical release at the facility;

a sixth database that provides selected information on regulatory requirements for receiving, handling, processing or producing hazardous materials, the sixth database including information on at least one environmental audit conducted at the facility, information on regulatory lists used at, and on regulatory issues concerning, the facility, and information on at least litigation issue concerning the facility; and

a seventh database that provides selected information on management of the facility, the seventh database including information on at least one of the physical structure and the organizational structure at the facility, information on tracking of at least one equipment item at the facility, and information on at least one process used at the facility;

a tools module that provides software for at least one of creation of a report on operations at the facility, creation of formulas and expressions for a report on operations, creation of at least one image for a report on operations, archiving of at least one record on operations, and security measures implemented at the facility, and that implements entry of one or more changes in regulatory and non-regulatory requirements for the business without requiring manual reprogramming of the tools module software; and

a relational database management module that links each database to each other database and to the tools module so that an information item, once entered, becomes available to each database and to the tools module.

US 6,341,288 B1

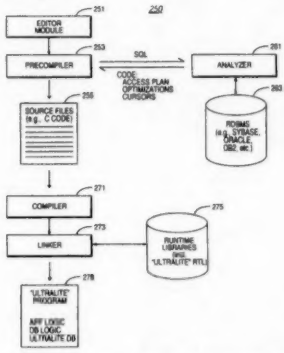
DATABASE SYSTEM WITH METHODOLOGY FOR ACCESSING A DATABASE FROM PORTABLE DEVICES

David P. Yach; James D. Graham, and Anthony F. Scian, all of Waterloo, Canada, assignors to Sybase, Inc., Emeryville, Calif.

Filed Jul. 29, 1998, Appl. No. 124,532

Int. Cl. G06F *17/30*

U.S. Cl. 707—103 R **25 Claims**



1. In a computer system, a method for creating a database application program for accessing and processing data from a database, the method comprising:

receiving source code for the database application program, the source code including embedded SQL statements;

examining the source code for determining information about the embedded SQL statements present in the source code;

passing the information about the embedded SQL statements present in the source code to a database management system for formulating data access;

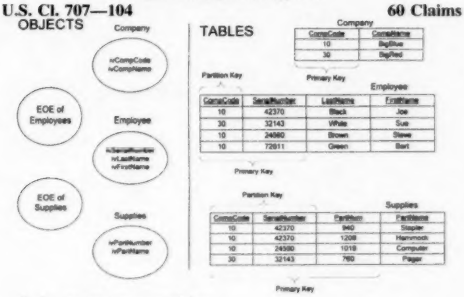
based on how data access has been formulated, creating new source code which includes new source code statements replacing the embedded SQL statements, said new source code statements including program logic that provides said data access; and

from the new source code, generating an executable version of the database application program.

US 6,341,289 B1
OBJECT IDENTITY AND PARTITIONING FOR USER DEFINED EXTENTS

Tracy Kim Burroughs, Byron; Wilson Douglas Lee, and Susan Carol Luebbe, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1999, Appl. No. 306,518
Int. Cl. G06F *17/00;7/00*
U.S. Cl. 707—104 **60 Claims**



1. An apparatus comprising:

at least one processor;

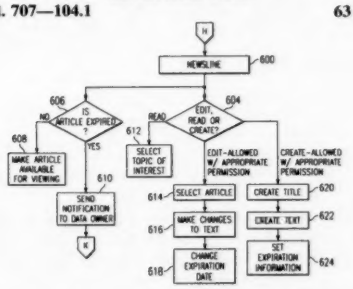
a memory coupled to the at least one processor;

a computer program residing in the memory and being executed by the at least one processor, the computer program including schema mapper for mapping between object attributes and fields in a database table, the schema mapper including a mechanism for defining a source of a partitioning key value and defining a partitioning key field in the database table for storing the partitioning key value, the partitioning key value identifying a partition containing the object within a class of objects, the partition defining a subclass of objects with the class.

US 6,341,290 B1
METHOD AND SYSTEM FOR AUTOMATING THE COMMUNICATION OF BUSINESS INFORMATION

Charlotte S. Lombardo, Rochester Hills; Eleanor F. Stryker, Romeo, both of Mich.; David A. Brenner, Lenexa, Kans.; Jayson W. Dymond, Orion, and Dave R. Lemieux, Sterling Heights, both of Mich., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed May 28, 1999, Appl. No. 322,707
Int. Cl. G06F *17/30*
U.S. Cl. 707—104.1 **63 Claims**



1. A system for automating the communication of business information, comprising:

a server operable to:

capture business information from a plurality of sources;

capture distribution information associated with the business information;

categorize the captured information in a standardized format;

determine whether any of the captured information has expired; and

display only portions of the captured information that has not expired; and

a database operable to communicate with the server, the database operable to:

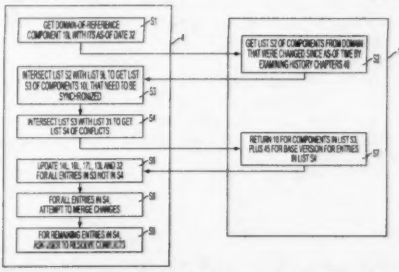
store the captured information; and

communicate the captured information to the server.

US 6,341,291 B1
SYSTEM FOR COLLABORATIVE ENGINEERING USING COMPONENT AND FILE-ORIENTED TOOLS

Keith A. Bentley, Elverson, Pa.; Samuel W. Wilson, Wilmington, Del.; Barry J. Bentley; Raymond B. Bentley, both of Elverson, Pa., and John B. Gooding, Spring City, Pa., assignors to Bentley Systems, Inc., Exton, Pa.

Provisional application No. 60/102,118, filed on Sep. 28, 1998. This application Apr. 22, 1999, Appl. No. 296,738.
Int. Cl. G06F *17/30*
U.S. Cl. 707—203 **12 Claims**


GET DOMAIN-OF-REFERENCE COMPONENT 10L WITH ITS AS-OF DATE 32
S1
GET LIST S2 OF COMPONENTS FROM DOMAIN THAT WERE CHANGED SINCE AS-OF TIME BY EXAMINING HISTORY CHAPTERS 40
S2
INTERSECT LIST S2 WITH LIST 9L TO GET LIST S3 OF COMPONENTS 10L THAT NEED TO BE SYNCHRONIZED
S3
INTERSECT LIST S3 WITH LIST 31 TO GET LIST S4 OF CONFLICTS
S4
RETURN 10 FOR COMPONENTS IN LIST S3, PLUS 45 FOR BASE VERSION FOR ENTRIES IN LIST S4
S7
UPDATE 9L, 10L, 12L, 13L AND 32 FOR ALL ENTRIES IN S3 NOT IN S4
S8
FOR ALL ENTRIES IN S4, ATTEMPT TO MERGE CHANGES
S5
FOR REMAINING ENTRIES IN S4, ASK USER TO RESOLVE CONFLICTS
S9

1. A method for synchronizing changes to a plurality of components stored in a central repository, the repository being accessible to plural users, each of whom are permitted to revise the components in the repository, the components representing file-based data of an engineering design file, the method comprising:

(a) a user creating a temporary design file at a local computer workstation by downloading the current data in the repository and converting the current data to create an original current version of the design file at the workstation;

(b) the user creating an edited version of the temporary design file from the original current version;

(c) the user requesting that the set of components which represent the edited version of the temporary design file be updated to reflect any component changes made in the repository since the creation of the original current version of the temporary design file by other users during the user's step (b) editing time period; and

(d) during updating, locally detecting resolvable and unresolvable component conflicts on a per component basis between the components which represent the edited temporary version of the design file and the latest current version of the components.

US 6,341,292 B1
SPREADSHEET-BASED NETWORK INFORMATION EXCHANGE WITH TWO-PART CACHE

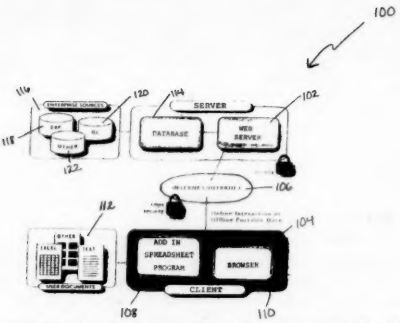
Charles J. Cho, and Perlie E. Voshell, both of Huntington, Conn., assignors to OutlookSoft Corporation, Stamford, Conn.

Filed May 30, 2000, Appl. No. 580,842
Int. Cl. G06F *12/00*
U.S. Cl. 707—203 **13 Claims**

1. A system for facilitating efficient database-related information exchanges across a network, comprising:

(a) a server that includes at least one database; and

(b) a client that includes a spreadsheet program and a cache, and that communicates with said server across a network, said



spreadsheet program generating at least one spreadsheet having a plurality of data cells;

wherein said cache stores data for use by said spreadsheet program in rendering said at least one spreadsheet, and

wherein, in response to said spreadsheet program attempting to render said at least one spreadsheet, said cache determines whether data required to render said at least one spreadsheet has been previously stored by said cache; and

wherein, to the extent data required to render said at least one spreadsheet has not been previously stored by said cache, said cache formulates a single query for transmission from said client across said network to said server requesting all required data.

US 6,341,293 B1

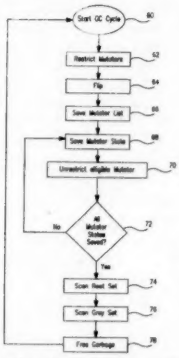
REAL-TIME COMPUTER "GARBAGE COLLECTOR"

Wade Hennessey, Palo Alto, Calif., assignor to Object Technology Licensing Corp

Filed Jul. 13, 1994, Appl. No. 274,923

Int. Cl. G06F *17/30*

U.S. Cl. 707—206 **17 Claims**



1. A method for performing real-time computer garbage collection, for use with a plurality of data objects and with one or more mutator programs, each one of said mutators having a corresponding thread and each one of said mutator threads having a corresponding thread state separate from said plurality of data objects, said method comprising the following steps:

commencing a new garbage collection cycle;

temporarily restricting execution of said mutators while processing the corresponding thread state for each one of said mutators;

permitting each one of said mutators to resume unrestricted execution, as soon as said mutator's own corresponding thread state has been processed;

completing the garbage collection cycle by identifying each one of said objects that is currently accessible to at least one of said mutators.

US 6,341,294 B1

IMAGE PROCESSING APPARATUS FOR RETRIEVING MOVING IMAGE DATA

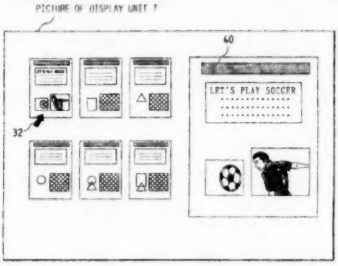
Tadashi Yoshida, Ichikawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1995, Appl. No. 489,635

Claims priority, application Japan, Jun. 14, 1994, 6-131821

Int. Cl. G06F *17/21*

U.S. Cl. 707—501.1 **10 Claims**



1. An image processing apparatus for reproducing desired moving image data from a storage medium on which a plurality of moving image data are stored, comprising:

a still image forming unit that forms still image data corresponding to each of the plurality of moving image data;

a retrieval image forming unit that forms retrieval data for retrieving the moving image data based on the still image data formed by said still image forming unit, so that a retrieval image is formed for each of the plurality of moving image data stored in said storage medium and includes therein as an image area a formed still image which corresponds to a moving image of the plurality of moving image data for which the retrieval image is formed;

a display unit that displays a retrieval image which corresponds to the retrieval data formed by said retrieval image forming unit, wherein said display unit displays a plurality of retrieval images simultaneously;

a designation unit that designates a retrieval image displayed by said display unit; and

a reproducing unit that reproduces the moving image data which corresponds to the designated retrieval image from the storage medium,

wherein said display unit magnifies and displays a retrieval image designated by said designation unit from among the plurality of retrieval images simultaneously displayed by said display unit, and wherein, in response to a further designation by said designation unit, said reproducing unit then reproduces the moving image data corresponding to the magnified retrieval image.

US 6,341,295 B1

VIRTUAL REALITY INTEGRATED CALORIC TABULATOR

M. Gail Stotler, 621 S. Bellwood, East Alton, Ill. 62024

Provisional application No. 60/072,011, filed on Jan. 21, 1998. This application Jan. 20, 1999, Appl. No. 234,555.

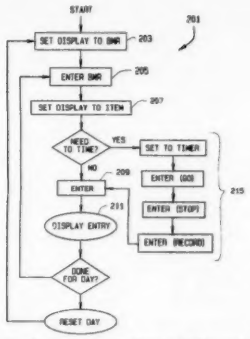
Int. Cl. G06F *3/00*

U.S. Cl. 708—131 **9 Claims**

1. A caloric tabulator system, comprising:

a self-contained portable hand-held computer having a processor, memory accessible by the processor, and input keys and a display both in communication with the processor;

baseline means for receiving and storing basal metabolism rate (BMR) caloric information regarding a user, including the input keys for receiving the BMR information and the memory for storing the BMR Information;



the processor configured to calculate a daily and weekly caloric balance and provide output data including icon representations for caloric addition items, caloric subtraction items, a selected one of the calculated daily or weekly balance, and positive feedback or negative feedback to the display responsive to the value selected balance;

the display being operatively coupled to said processing means and adapted to receive and display the output data, including the icon representations; and

the input keys configured to allow a user to select among the icon representations for at least one of caloric addition items, caloric subtraction items, calculated balances and feedback.

US 6,341,296 B1

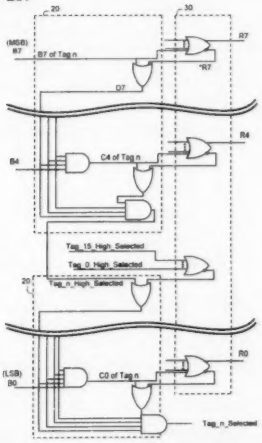
METHOD AND APPARATUS FOR EFFICIENT SELECTION OF A BOUNDARY VALUE

P. Reghavan Menon, Santa Clara, Calif., assignor to PMC-Sierra, Inc., British Columbia, Canada

Provisional application No. 60/083,297, filed on Apr. 28, 1998. This application Apr. 27, 1999, Appl. No. 300,357.

Int. Cl. G06F *7/00;7/50*

U.S. Cl. 708—207 **10 Claims**



1. A device for selecting a boundary value from a plurality of input values each having a plurality of bits, the device comprising:

a plurality of logic slice blocks each associated with a different one of the plurality of input values, each logic slice block configured to generate an output signal that is asserted if the input value associated with that logic slice block is selected as the boundary value; and

a common logic block configured to combine the bits of the plurality of input values to produce the boundary value.

US 6,341,297 B1

PARALLEL PROCESSING SYNDROME CALCULATING CIRCUIT AND REED-SOLOMON DECODING CIRCUIT

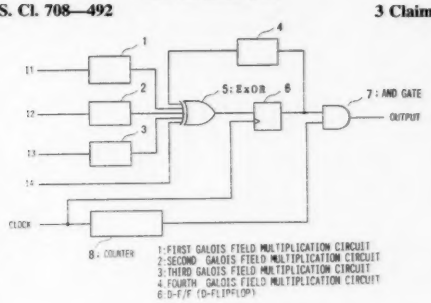
Hiroshi Tezuka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 23, 1998, Appl. No. 219,324

Claims priority, application Japan, Dec. 26, 1997, 9-368781

Int. Cl. G06F *7/00*

U.S. Cl. 708—492 **3 Claims**



1. A Galois field substitution circuit of a Galois field of a^p, in a syndrome polynomial calculating circuit, comprising:

j Galois field multiplication circuits;

an exclusive OR circuit having (j+1) inputs;

a D-flipflop;

a selector circuit; and

a counter circuit; wherein

(a) j blocks of time divisionally multiplexed signals are entered as input signals, of which first one block signal is entered to a first input of said exclusive OR circuit, with second to jth block signals being entered to first to (j−1)th Galois field multiplication circuits, respectively;

(b) outputs of said first to (j−1)th Galois field multiplication circuits are fed to second to jth inputs of said exclusive OR circuit;

(c) an output of said exclusive OR circuit is fed to a data input terminal of a D-flipflop;

(d) an output of said D-flipflop is branched into two, one of which is fed to the jth multiplication circuit and the other of which is entered to a first input of said selector circuit;

(e) an output of said jth Galois field multiplication circuit is fed to a (j+1)th input of said exclusive OR circuit;

(f) input clock signals are fed to a clock terminal of said D flipflop and to said counter;

(g) a control signal output by said counter is entered to said selector circuit as a selection control signal;

(h) said counter counts a one-frame signal input and sets the control signal to logical 1 to output the logical 1 signal when the counter value is that at the last inputting of the one-frame signal;

(i) said selector circuit selectively outputs a signal at a second input and a signal at a first input if the selection control signal is the logical 0 or logical 1, respectively, while the second input terminal of said selector is normally fixed at the logical 0; and

(j) an output of the D flipflop and the counter value are reset after inputting of a one-frame input, and wherein

(k) the Galois field multiplication circuits have each a Galois field a with power of p to jp.

US 6,341,298 B1

SIGNAL EQUALIZATION

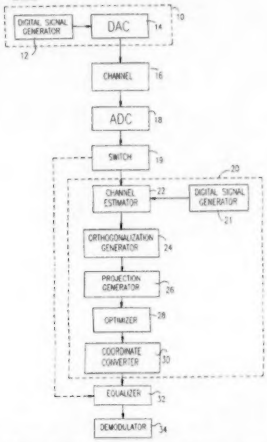
Yishai Ilani, Dolev, Israel, assignor to ECI Telecom Ltd., Petach Tikva, Israel

Filed Mar. 18, 1999, Appl. No. 272,649

Claims priority, application Israel, Mar. 22, 1998, 123782

Int. Cl. G06F *7/32;17/10*

U.S. Cl. 708—520 **23 Claims**



1. A method for calculating a vector A from a set comprising at least one pair of subspaces of R^N wherein N is the dimension of said vector space, each of said at least one pair comprises a first subspace and a second sub space of the vector space R^N, and a set of maximal projections and their corresponding unit vectors, each of said maximal projections is associated with one of said pairs of subspaces, wherein for each of said pairs of subspaces said first subspace is the column space of a N by m matrix M and said second subspace is a function of a predefined set of indices between 1 and N, comprising:

for each of said pairs of subspaces:

determining a unit vector C in one of said subspaces so that a projection of

said unit vector upon another of said vector subspaces is maximal for all unit

vectors in said one of said vector subspaces;

applying a predefined optimizing function to said set of maximal projections and unit vectors, thereby selecting a maximal projection and its corresponding unit vector and pair of first and second subspaces;

determining a vector A having length m, so that the product of said vector A and matrix M is a unit vector B and the projection of B upon second subspace in the pair corresponding to said selected maximal projection is equal to said selected maximal projection.

US 6,341,299 B1

MODULAR ARITHMETIC COPROCESSOR ENABLING THE PERFORMANCE OF NON-MODULAR OPERATIONS AT HIGH SPEED

Fabrice Romain, Aix en Provence, France, assignor to STMicroelectronics S.A., Gentilly, France

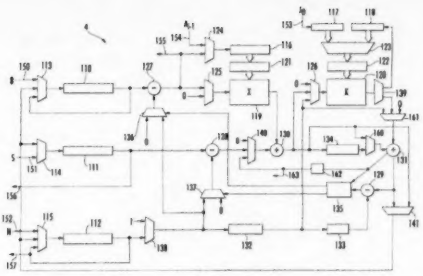
Filed Feb. 19, 1999, Appl. No. 253,681

Claims priority, application France, Feb. 26, 1998, 98 02499

Int. Cl. G06F *7/48;7/72*

U.S. Cl. 708—523 **13 Claims**

1. A computation circuit for performing an operation of S=A*B+C, with A and B being integers encoded on at most m*k bits, C being an integer encoded on at most 2*m*k bits, and m and k being non-zero integers, the computation circuit comprising:



a first m*k bit register for storing B, a second m*k bit register for storing at least one of m least significant k-bit words of C and an intermediate result, and a third m*k bit register for storing at least one of a least significant k-bit word of S and a most significant k-bit word of C;

a fourth k bit register for storing a k-bit word of A;

a first multiplication circuit for multiplying the data elements of said first and fourth bit registers;

addition means;

storing means;

first linking means for connecting an output of said first multiplication circuit and an output of said second bit register to first and second inputs of said addition means for adding m least significant words of a result output from said first multiplication circuit and contents of said second bit register, and then connecting simultaneously the output of said first multiplication circuit, an output of said storing means and an output of said third bit register respectively to the first input, the second input and a third input of said addition means after the contents of the second bit register has been added, and for adding simultaneously a most significant word of the result output from said first multiplication circuit, a carry value stored in said storing means during a previous addition and a word of C to be added; and

second linking means for connecting an output of said addition means to an input of said third bit register for storing a word of S in said third bit register, and then connecting the output of said addition means to an input of said second bit register for storing an updated intermediate result, and then connecting the output of said addition means to an input of said storing means for storing an updated carry value, if any, coming from an overflow of the result of the addition.

US 6,341,300 B1

PARALLEL FIXED POINT SQUARE ROOT AND RECIPROCAL SQUARE ROOT COMPUTATION UNIT IN A PROCESSOR

Ravi Shankar, Sunnyvale, and Subramania I. Sudharsanan, Union City, both of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jan. 29, 1999, Appl. No. 240,977

Int. Cl. G06F *7/38;7/552*

U.S. Cl. 708—605 **19 Claims**

1. A method of computing a reciprocal square root of a number X in a computing device comprising:

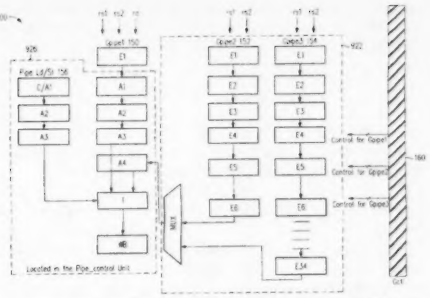
computing a piece-wise quadratic approximation of the number X using an equation of the form:

$1/\sqrt{X}=Ax^2+Bx+C$, the number X having a mantissa and an exponent, the computing operation including:

accessing the A, B, and C coefficients from a storage;

computing the value Ax^2+Bx+C result, the result having a mantissa and an exponent;

shifting the result exponent right by one bit;



correcting an error that occurs when an asserted bit in the result exponent is discarded by the shifting operation, the correcting operation including multiplying the computed result by a correction constant, wherein the number X includes two fixed point numbers for which the square root computation takes place in parallel using the same coefficient tables as are used for a calculation of a floating point square root.

US 6,341,301 B1

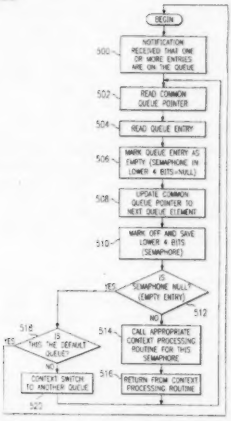
EXCLUSIVE MULTIPLE QUEUE HANDLING USING A COMMON PROCESSING ALGORITHM

Stephen C. Hagan, Wichita, Kans., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 10, 1997, Appl. No. 781,462

***Int. Cl. G06F** 9/00*

U.S. Cl. 709—100 **27 Claims**



1. A method for handling a plurality of queues and a plurality of pointers in a data processing system, wherein each queue within the plurality of queues is associated with a pointer within the plurality of pointers, the method comprising:

designating a first queue within the plurality of queues as a current queue and a first pointer within the plurality of pointers, associated with the first queue, as a current pointer;

reading an entry within the current queue using the current pointer associated with the current queue;

storing the current pointer in response to a condition requiring a change in queues;

designating a second pointer within the plurality of pointers as a current pointer; and

reading an entry within a second queue within the plurality of queues associated with the current pointer.

US 6,341,302 B1

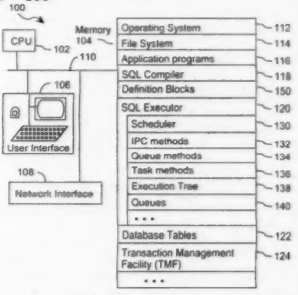
EFFICIENT INTER-TASK QUEUE PROTOCOL

Pedro Celis, Austin, Tex., assignor to Compaq Information Technologies Group, LP, Houston, Tex.

Filed Sep. 24, 1998, Appl. No. 160,367

***Int. Cl. G06F** 9/00*

U.S. Cl. 709—100 **8 Claims**



1. A system for executing database queries, comprising:

a set of task data structures representing a directed graph of logically interconnected tasks, the directed graph of logically interconnected representing an execution plan for executing at least a portion of a specified database query;

an executor module for executing the tasks represented by the set of task data structures;

a pair of queues for each pair of interconnected tasks represented by the set of task data structures, one of the queues in each pair comprising a down queue for sending requests from a parent task, comprising a first one of the pair of tasks, to a child task, comprising a second one of the pair of tasks, and the other of the queues in each pair for comprising an up queue for sending replies from the child task to the parent task, each reply corresponding to one of the requests;

each of a first subset of the tasks including means for reading requests from a down queue in a respective one of the pairs of queues, for generating a corresponding result and for writing the result as a reply into the up queue in the respective pair of queues;

each of a second subset of the tasks including means for writing requests into a down queue in a respective one of the pairs of queues, for reading a corresponding reply in the up queue in the respective pair of queues;

wherein

each task includes queue fullness checking means for checking that a first respective one of the queues is not full before writing data into the first respective queue, and queue empty checking means for checking that a second respective one of the queues is not empty before reading data from the second respective queue; and

each task writes and reads data to and from respective ones of the queues without first acquiring ownership of a corresponding synchronization mechanism.

US 6,341,303 B1

SYSTEM AND METHOD FOR SCHEDULING A RESOURCE ACCORDING TO A PRECONFIGURED PLAN

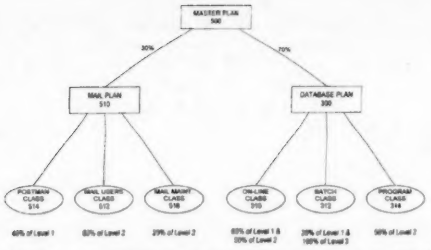
Ann Rhee, Foster City; Sumanta K. Chatterjee, Fremont; Juan R. Loaiza, San Carlos, all of Calif., and Kesavan Srinivasan, Hudson, Ohio, assignors to Oracle Corporation, Redwood Shores, Calif.

Filed Aug. 28, 1998, Appl. No. 141,664

***Int. Cl. G06F** 9/00*

U.S. Cl. 709—104 **27 Claims**

1. A method of allocating a resource in a computer system, comprising:



identifying a plurality of requester classes among which the resource is to be allocated, each requester class including one or more requesters of the resource;

constructing a plan specifying an allocation of the resource among the plurality of requester classes, the plan including multiple levels;

for each level in the plan, associating a weight for allocating the resource with each of the plurality of requester classes; and

allocating the resource among the plurality of requester classes according to the plan by starting a first level of the plan and allocating the resource to requester classes according to the weights at the first level, and if any of the resource remaining after the first level, continuing on to successive levels of the plan, and allocating the resource according to the weights at each successive level until either the resource is fully allocated or allocation has taken place for each level.

US 6,341,304 B1

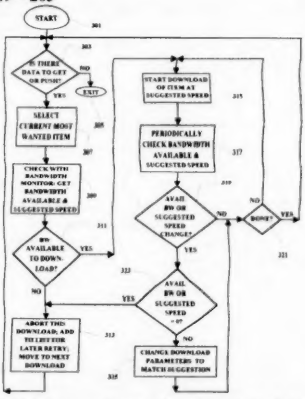
DATA ACQUISITION AND DISTRIBUTION PROCESSING SYSTEM

Antonius Paulus Engbersen, Feusisberg, Switzerland, and Jason Juan Hernandez, Kirkland, Wash., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 23, 1999, Appl. No. 404,282

Int. Cl. G06F *11/00*

U.S. Cl. 709—203 **19 Claims**



1. A method for processing local requests for a data item stored at a remote site, said method comprising:

receiving a request from one or more local terminals to access said data item at said remote site;

determining an available bandwidth upon receiving said request,

downloading said data item to said local non-volatile storage device when said data item is requested by more than a predetermined number of said local terminals, said downloading being postponed if said available bandwidth is below a predetermined threshold value; and

accessing said data item from said local non-volatile storage device in response to subsequent requests from said local terminals to access said data item.

US 6,341,305 B2

SYSTEM AND METHOD FOR COMMUNICATING INFORMATION RELATING TO A NETWORK RESOURCE

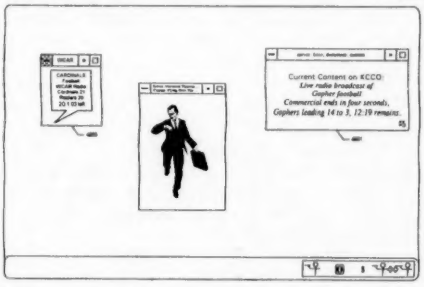
Mark A. Wolfe, 1076 Tamberwood Ct., Woodbury, Minn. 55125

Continuation of application No. 08/936,910, filed on Sep. 25, 1997, now Pat. No. 6,006,252, Provisional application No. 60/052,830, filed on Jul. 17, 1997, Provisional application No. 60/028,251, filed on Oct. 8, 1996. This application Nov. 16, 1999, Appl. No. 442,193.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *15/16*

U.S. Cl. 709—203 **18 Claims**


Current Content on KCCO:
Live radio broadcast of
Gopher football
Commercial ends in four seconds,
Gophers leading 14 to 3, 12:19 remains.

1. A system comprising:

(a) a network having a first server, a second server, and a third server, all of which are in communication with each other on the network;

(b) a client computer having a display screen, wherein the client computer is operated by a user, and wherein the client computer is connected to the network and in communication with the first server, the second server, and the third server; and

(c) a data storage medium that is accessible to the client computer and that has stored on it an application executing on the client computer, wherein the application has an application window that is displayed on the client computer display screen and that includes within it (1) a primary web browser area and also (2) a secondary area, wherein the secondary area is separate from and not part of the primary web browser area and wherein the contents of the secondary area are independent from the document displayed in the primary web browser area, meaning that the contents of the secondary area are not part of or embedded in the document displayed in the primary web browser, area wherein both the primary web browser area and the secondary area are displayed simultaneously and are integrated into the application window, and wherein the application is configured to cause the client computer to:

retrieve a first document over the network from the first server, wherein the first document is displayed in the primary web browser area as a hypertext document that includes graphical display elements,

automatically send a first command over the network to the third server so that information relating to the first document can be determined, wherein the first command communicates information about the first document to the third server, and wherein the third server is not related to the first server,

receive a reply in response to sending the first command over the network to the third server, wherein the reply includes information that relates to the first document,

upon receiving the reply in response to sending the first command over the network to the third server, display content in the secondary area that is integrated into the

application window, wherein the content includes information received in the reply that relates to the first document and includes a link to a second document, wherein the content is published by an entity different than the publisher of the first document and is not part of the first document, and wherein the secondary area and the primary web browser area are displayed simultaneously within the application window so that the content in the secondary area is automatically displayed for the user along with the first document that is displayed in the primary web browser area,

display the second document in the primary web browser area when the user selects the link to the second document in the secondary area, wherein the second document is retrieved over the network from the second server,

automatically send a second command over the network to the third server so that information relating to the second document can be determined, wherein the second command communicates information about the second document to the third server,

receive a reply in response to sending the second command over the network to the third server, wherein the reply includes information that relates to the second document, and

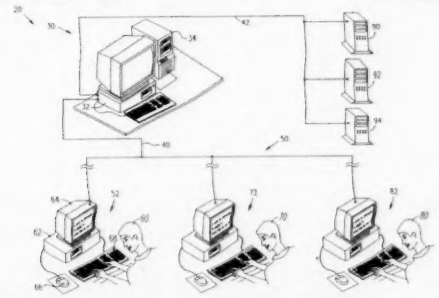
upon receiving the reply in response to sending the second command over the network to the third server, update the content in the secondary area that is integrated into the application window so that the secondary area is automatically updated when the second document replaces the first document in the primary web browser area, wherein the content displayed in the secondary area is updated to include information received in the reply that relates to the second document and include a link to a document that relates to the second document, wherein the content displayed in the secondary area is published by an entity different than the publisher of the second document and is not part of the second document, and wherein the secondary area and the primary web browser area are displayed simultaneously within the application window.

US 6,341,306 B1

WEB-BASED INFORMATION RETRIEVAL RESPONSIVE TO DISPLAYED WORD IDENTIFIED BY A TEXT-GRABBING ALGORITHM

Bob Rosenschein, Jerusalem; Jeff Schneiderman, Ma'ale Michmas; Daniel Brief; Naama Bamberger, both of Jerusalem; Gil Reich, Eli; Uri Bernstein, Jerusalem; Tamar Rosen, *Jerusalem, and Asher Szmulewicz, Jerusalem, all of Israel,* assignors to Atomica Corporation, Burlingame, Calif.

Filed Aug. 13, 1999, Appl. No. 374,478
Int. Cl. G06F *17/30*
U.S. Cl. 709—217 **10 Claims**



1. A method for providing information, comprising:

contracting with one or more advertisers having respective fields of business to provide promotional data to users of a network *regarding the fields of business;*

receiving from a host via the network at least one word designated by one of the users, the word being in a natural language in a body of text shown on a display of the host and transmitted by the host automatically responsive to the designation;

determining that the at least one designated word relates to a given one of the fields of business; and

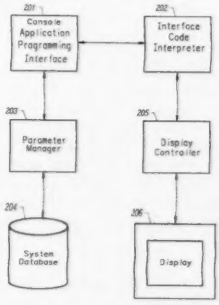
transmitting to the host the promotional data regarding the given field of business.

US 6,341,307 B1

INTERFACE CODE ARCHITECTURE

Lambert Chun-Bob Lum, Hayward; Craig Seidel, Palo Alto; Zhengo (Mark) Guan, Mountain View, all of Calif., and James K. Schwarz, Jr., Boulder, Colo., assignors to Electronics for Imaging, Inc., Foster City, Calif.

Continuation of application No. 08/933,126, filed on Sep. 18, 1997, *now Pat. No. 6,065,041. This application Jan. 31, 2000,* Appl. No. 495,289.
This patent is subject to a terminal disclaimer.
Int. Cl. G06F *15/177*
U.S. Cl. 709—220 **56 Claims**



1. A process for displaying user interface screens on a plurality of dissimilar display devices using a unified interface expression, *comprising the steps of:*

creating a list of generic user interface screen descriptions at a server;

identifying the display type associated with a client; and

updating a client display using said generic user interface screen descriptions;

wherein said client and server may optionally be co-located.

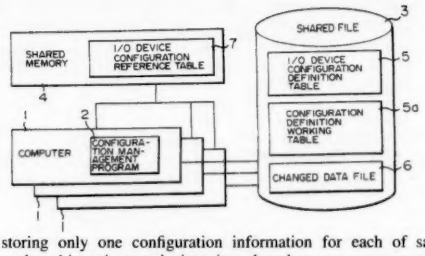
US 6,341,308 B1

INPUT/OUTPUT DEVICE INFORMATION MANAGEMENT SYSTEM FOR MULTI-COMPUTER SYSTEM

***Toshio Yamaguchi, Yokohama; Kazuo Imai, Higashikurume,* and Masatoshi Haraguchi, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

Continuation of application No. 08/948,071, filed on Oct. 9, 1997, now Pat. No. 6,115,738, which is a continuation of application No. 08/371,376, filed on Jan. 11, 1995, now Pat. No. 5,717,950. This application Aug. 15, 2000, Appl. No. 638,027.
Claims priority, application Japan, Jan. 11, 1994, 6-001234
Int. Cl. G06F *15/177*
U.S. Cl. 709—220 **20 Claims**

1. An input/output device information management method for a multi-computer system having a plurality of computers and a plurality of shared input/output devices, each of said shared input/output devices being coupled with at least two of said computers, said input/output device information management method comprising *the steps of:*



storing only one configuration information for each of said shared input/output devices, in a shared storage area accessed by, and connected to, the plurality of computers; and

referring to said one configuration information for each of said shared input/output devices stored in said shared storage area to select at least one of said shared input/output devices that adapted the requirement of the computers,

wherein said one configuration information for each of said shared input/out devices includes an information part and a connection information part for the input/output device, and said computers access the input/output device by referring to the configuration information.

US 6,341,309 B1

FIREWALL SYSTEM FOR QUALITY OF SERVICE MANAGEMENT

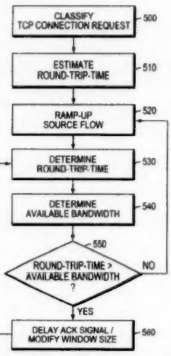
Aseem Vaid, San Jose, and Sanjay Sawhney, Santa Clara, both of Calif., assignors to Novell, Inc., Provo, Utah

Provisional application No. 60/047,752, filed on May 27, 1997. This application Dec. 24, 1997, Appl. No. 998,314.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *15/173*

U.S. Cl. 709—223 **20 Claims**



1. A system for monitoring quality of service within a network of computers, said system comprising:

a plurality of computers coupled to form an internal network of computers;

a firewall server comprising a firewall program coupled to at least one of said plurality of computers and coupled to an outgoing line to a wide area network of computers, said firewall server being configured to receive a connection request, estimate a bit rate over a round-trip-time between said at least one of said plurality of computers and the wide area network of computers, receive a receive acknowledgment signal at said at least one of said plurality of computers, delay transmission of a receive acknowledgment signal when the bit rate is greater than a bit rate limit, and transmit the receive acknowledgment signal over the outgoing line when the bit rate is not greater than the bit rate limit; and

a bandwidth management tool coupled to said firewall server, said bandwidth management tool being capable of monitoring and managing incoming and outgoing information to and from said firewall server by classifying the connection request received at said firewall server into a traffic class from a plurality of traffic classes, determining a minimum bandwidth for said plurality of traffic classes, determining a maximum latency for said plurality of traffic classes, and dynamically allocating bandwidth to the connection request based on the traffic class into which the connection request is classified, said traffic class having a minimum bandwidth and/or a maximum latency, and the total traffic on the system.

US 6,341,310 B1

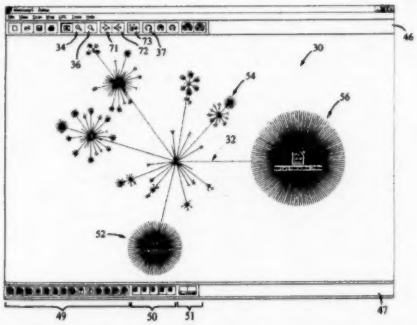
SYSTEM AND METHODS FOR FACILITATING THE VIEWING AND ANALYSIS OF WEB SITE USAGE DATA

Eran Leshem, Gan Shomron, and Amir Weinberg, Zoran, both of Israel, assignors to Mercury Interactive Corporation, Sunnyvale, Calif.

Division of application No. 08/840,103, filed on Apr. 11, 1997, now Pat. No. 5,870,559, Provisional application No. 60/028,474, filed on Oct. 15, 1996. This application Oct. 26, 1998, Appl. No. 178,707.

Int. Cl. G06F *13/00;15/173;* **H02H** *3/05;* **H04L** *12/437*

U.S. Cl. 709—223 **24 Claims**



1. A graphical method for facilitating the viewing and analysis of web site usage data, the web site usage data based at least in-part on historical records of accesses by visitors to the web site, the method comprising the computer-implemented steps of:

generating a graphical map of a web site on a display monitor, the map including graphical representations of user-accessible content objects of the web site, and including graphical representations of user-selectable links between content objects of the web site, the graphical representations of content objects and links arranged within the map to show the architecture of the web site; and

displaying the web site usage data on the map, the step of displaying comprising color-coding at least some of the graphical representations of the content objects and/or of the links within the map such that different colors represent different levels of usage by visitors to the web site.

US 6,341,311 B1

DIRECTING DATA OBJECT ACCESS REQUESTS IN A DISTRIBUTED CACHE

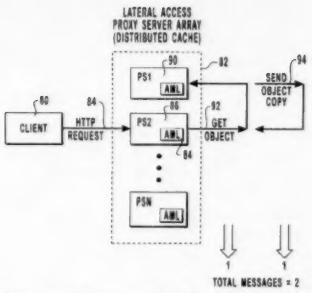
Brian J. Smith, Seattle; Vinod V. Valloppillil, Redmond, both of Wash., and Hans Hurvig, Copenhagen, Denmark, assignors to Microsoft Corporation, Redmond, Wash.

Filed May 29, 1998, Appl. No. 87,330

Int. Cl. G06F *13/00*

U.S. Cl. 709—226 **24 Claims**

1. In a computer network interconnecting a plurality of server systems that store data objects and an array of proxy servers configured to request, receive, and cache data objects from the



plurality of server systems on behalf of one or more clients, a method of routing a data object request to a proxy server of the array that is assigned to cache the requested data object, without querying each individual proxy server in the array to determine which proxy server is assigned to cache the requested data object, the method comprising:

providing array membership information at one or more proxy servers, wherein the array membership information identifies one or more proxy servers that are active in the array at a given time;

from at least one client, receiving a request for a data object at a particular proxy server in the array of proxy servers;

performing, by the particular proxy server, a deterministic operation on the array membership information and the data object request in order to identify a proxy server in the array that is assigned to cache the requested data object;

forwarding the data object request to the proxy server identified in the deterministic operation if the identified proxy server is different from the particular server that initially received the request;

examining a local cache of the identified proxy server for the requested data object, and if not found, forwarding the request for the data object to a location external to the array membership so as to obtain the requested data object on behalf of the at least one client and then storing the requested data object in the local cache of the identified proxy server within the array membership; and

sending the requested data object to the at least one client system that requested the data object.

US 6,341,312 B1

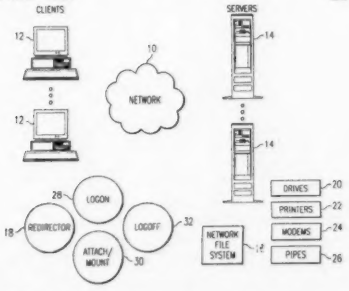
CREATING AND MANAGING PERSISTENT CONNECTIONS

Steven Michael French, and Thomas Frank Peebles, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1998, Appl. No. 213,326

Int. Cl. G06F *13/00*

U.S. Cl. 709—227 **21 Claims**



1. A method for managing persistent network connections to network devices, comprising the steps of:

following user logon, designating a selected network connection as persistent;

saving a security context associated with the selected network connection, wherein the security context optionally differs from a security context associated with the user logon;

responsive to a given network event, using the saved security context to manage the selected network connection.

US 6,341,313 B1

FLOW CONTROLLING METHOD AND APPARATUS FOR NETWORK BETWEEN PROCESSORS

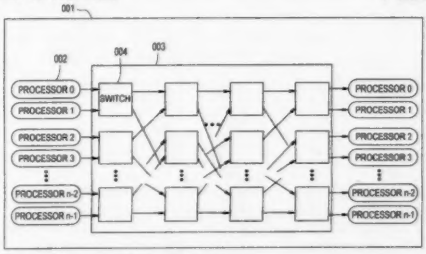
Yasushi Kanoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 1, 1999, Appl. No. 241,075

Claims priority, application Japan, Feb. 2, 1998, 10-020558

Int. Cl. G06F *15/16;* **H04L** *12/28*

U.S. Cl. 709—227 **6 Claims**



1. A packet switch, comprising:

data inputs and data outputs;

for each of said data inputs, a set of respective FIFO memories, said packet switch having a total number of said FIFO memories equal to a square of a number of said data inputs, each FIFO memory of said set of respective FIFO memories being large enough to hold an entire data packet; and

means for transmitting a state signal for a given one of said FIFO memories to another device; wherein:

said packet switch is adapted to operate so that, once a transmission of one of said data packets from one of said respective FIFO memories to one of said data outputs is started, said one of said data packets is transmitted without stopping until said one of said data packets is completely emptied out of said one of said respective FIFO memories;

said means for transmitting changes said state signal from a write disable state to a write enable state at the beginning of a transmission of a data packet from said given one of said FIFO memories to one of said data outputs; said change to said write enable state indicating to a preceding packet switch that said given one of said FIFO memories is enabled for writing; and

said means for transmitting outputs said state signal before said one of said data packets is completely emptied out of said said given one of said FIFO memories.

US 6,341,314 B1

WEB-BASED VIRTUAL COMPUTING MACHINE

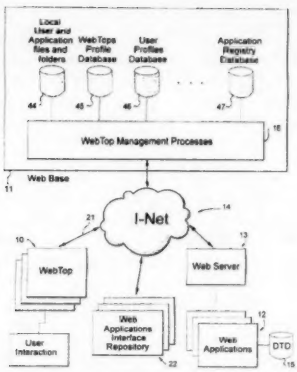
Yurdaer Nezihi Doganata, Chestnut Ridge; Franco Marconcini, New York; Magda Mahmoud Mourad, Yorktown Heights, all of N.Y.; Jonathan P. Munson, Chapel Hill, N.C.; Giovanni Pacifici, New York, and Asser Nasreldin Tantawi, Somers, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1999, Appl. No. 281,473

Int. Cl. G06F *13/00*

U.S. Cl. 709—229 **32 Claims**

1. A system for controlling resources distributed throughout a computer network and providing access to said resources from a client computer terminal, said system comprising:



one or more client computers connected to said network for providing a graphical user interface for enabling said client computers to perform operations on said distributed resources via said network as well as on local resources; and

one or more servers connected to said network for storing files and settings of each of said client computers and for executing said resources responsive to commands initiated by said client computers, said servers comprising:

an application processing means for executing automation applications to enable automatic interaction between each of said client computers and said distributed resources;

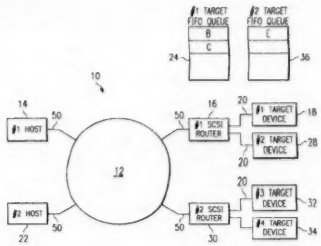
an application registration means to register and store information including a location interface specification for each of said distributed resources; and

a means for said automation applications to exchange data between two or more of said resources.

US 6,341,315 B1
STREAMING METHOD AND SYSTEM FOR FIBER CHANNEL NETWORK DEVICES

Keith M. Arroyo, and Stephen K. Wilson, both of Austin, Tex., assignors to Crossroads Systems, Inc., Austin, Tex.

Filed Feb. 26, 1999, Appl. No. 259,160
Int. Cl. G06F *15/16*
U.S. Cl. 709—230 **43 Claims**



1. A method for processing commands to a sequential access target device ("SATD") through a SCSI router in a Fibre Channel network having a plurality of Fibre Channel hosts, comprising the steps of, in the SCSI router:

(a) receiving a command from one of the plurality of Fibre Channel hosts;

(b) if the command requires a data transfer smaller than a threshold size, storing the data in one or more memory buffers as they become available and forwarding the data to the SATD; and

(c) if the command requires a data transfer larger than the threshold size, streaming the data to the SATD, wherein streaming the data to the SATD comprises:

(1) determining if a preset size memory block is free;

(2) if the preset size memory block is free, requesting a data block from the Fibre Channel host that issued the command, otherwise holding-off the Fibre Channel host that issued the command;

(3) receiving the data block from the Fibre Channel host that issued the command and storing the data block in a FIFO queue;

(4) repeating steps (1)–(3) until an initial number of data blocks are received and stored in the FIFO queue;

(5) forwarding the command and a first data block in the FIFO queue to the SATD;

(6) receiving a request from the SATD for a next data block;

(7) forwarding the next data block in the FIFO queue to the SATD;

(8) repeating steps (6)–(7) until a trigger number of data blocks remain in the FIFO queue;

(9) requesting an additional data block from the Fibre Channel host that issued the command;

(10) receiving the additional data block and storing it in the FIFO queue;

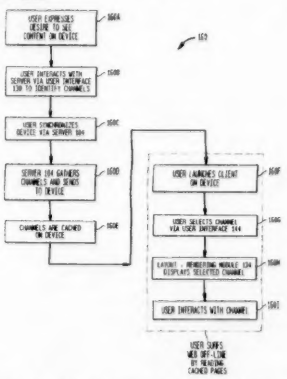
(11) receiving a request from the SATD for the next data block and forwarding the topmost data block in the FIFO queue; and

(12) repeating steps (9)–(11) until all the data has been transferred.

US 6,341,316 B1
SYSTEM, METHOD, AND COMPUTER PROGRAM PRODUCT FOR SYNCHRONIZING CONTENT BETWEEN A SERVER AND A CLIENT BASED ON STATE INFORMATION

David D. Kloba, Mountain View; Michael R. Gray, Foster City; David M. Moore, San Francisco; Thomas E. Whittaker, Belmont; David J. Williams; Rafael Z. Weinstein, both of San Francisco; Joshua E. Freeman, San Jose, and Linus M. Upson, Redwood City, all of Calif., assignors to AvantGo, Inc., San Mateo, Calif.

Continuation-in-part of application No. 09/393,390, filed on Sep. 10, 1999, Provisional application No. 60/173,807, filed on Dec. 30, 1999, Provisional application No. 60/189,969, filed on Mar. 17, 2000. This application Apr. 28, 2000, Appl. No. 560,965.
Int. Cl. G06F *15/16*
U.S. Cl. 709—248 **24 Claims**


USER EXPRESSES DESIRE TO SEE CONTENT ON DEVICE
160A
163
USER INTERACTS WITH SERVER VIA USER INTERFACE 134 TO IDENTIFY CHANNELS
160B
USER SYNCHRONIZES DEVICE VIA SERVER 104
160C
SERVER 104 GATHERS CHANNELS AND SENDS TO DEVICE
160D
CHANNELS ARE CACHED ON DEVICE
160E
USER LAUNCHES CLIENT ON DEVICE
160F
USER SELECTS CHANNEL VIA USER INTERFACE 134
160G
LAYOUT / RENDERING MODULE 134 DISPLAYS SELECTED CHANNEL
160H
USER INTERACTS WITH CHANNEL
160I
USER SURFS WEB OFF-LINE BY VIEWING CACHED PAGES

1. A method of synchronizing a server and a client on behalf of a user, comprising the steps of:

(1) receiving at least one synchronization request comprising information enabling the server to update the client;

(2) accessing providers using state information to retrieve content associated with the user according to at least said at least one synchronization request, wherein said state information is

maintained by the server and said state information indicates content which the user wishes to transmit to the client;

(3) generating at least one instruction to update the client based on content obtained from the providers in step (2); and

(4) transmitting said at least one instruction, wherein the client is updated according to said at least one instruction.

US 6,341,317 B1

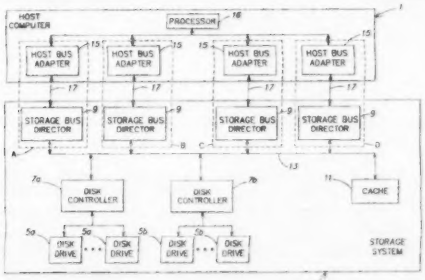
METHOD AND APPARATUS FOR MANAGING A LOG OF INFORMATION IN A COMPUTER SYSTEM INCLUDING AN INTELLIGENT STORAGE SYSTEM

Matthew J. D'Errico, Southboro; Steven M. Blumenau, Hollis-ton, and Erez Ofer, Brookline, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Dec. 30, 1998, Appl. No. 223,596

Int. Cl. G06F *13/00*

U.S. Cl. 710—15 **69 Claims**



1. A method of managing a log of information in a computer system including a host computer and an intelligent storage system that is coupled to the host computer and stores data accessed by the host computer, the computer system including a plurality of logical volumes of data that are visible to the host computer and the storage system and that are perceived by the host computer as comprising a plurality of raw storage devices, the storage system including at least one physical storage device and at least one mapping layer that maps the plurality of logical volumes to the at least one physical storage device, the method comprising a step of:

(A) creating the log to include information concerning at least one input/output (I/O) operation passed from the host computer to the intelligent storage system, the information including a first component of information relating to aspects of the at least one I/O operation controlled by the host computer and a second component of information relating to aspects of the at least one I/O operation controlled by the intelligent storage system.

US 6,341,318 B1

DMA DATA STREAMING

Dani Y. Dakhil, Campbell, Calif., assignor to Chameleon Systems, Inc., Sunnyvale, Calif.

Filed Aug. 10, 1999, Appl. No. 371,461

Int. Cl. G06F *13/28*

U.S. Cl. 710—23 **13 Claims**

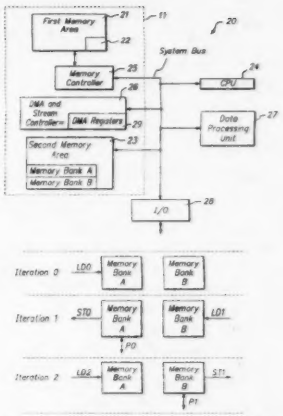
1. A system comprising:

a first memory storage means for storing a block of data, said first memory storage means having an associated first buffer size;

a second memory storage means having an associated second buffer size and having a first memory bank area and a second memory bank area each having a size at least half that of said second buffer size;

a means for processing data;

a first control means for performing direct memory access (DMA) transactions;



a second control means for synchronizing the operations performed by said processing means and said first control means;

said first control means and said second control means performing a streaming DMA request including a plurality of consecutive queued DMA transactions such that:

1) during an initial iteration:

a portion of data from said block of data is loaded into said first memory bank area;

2) during a second consecutive iteration:

said portion of data loaded into said first memory bank area during the previous iteration is processed and then stored out of said second memory storage means;

a next portion of data from said block of data is loaded into the second memory bank area; and

said processing means and said first control means are synchronized to ensure processing operations performed by said processing means and DMA transactions are complete;

3) during a third consecutive iteration:

data that was loaded into said second memory bank area during said second iteration is processed and then consecutively stored out of said second memory storage means;

said next portion of data from said block of data is loaded into said first memory bank area; and

said processing means and said first control means are synchronized to ensure processing operations performed by said processing means and DMA transactions are complete;

4) subsequent iteration:

repeat second and third iterations until all of said block of data has been loaded, processed, and consecutively stored out of said second memory storage means.

US 6,341,319 B1

SYSTEM AND METHOD FOR TRANSMITTING/RECEIVING SIGNAL LEVEL DATA

Hiraku Inoue, Kanagawa; Harumi Kawamura; Atsushi Endo, both of Tokyo, and Kazuo Yamamoto, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

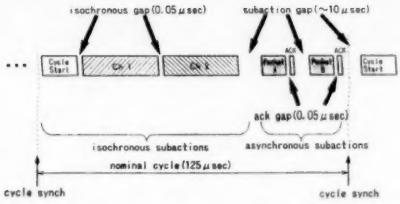
Filed Jan. 19, 1999, Appl. No. 232,633

Claims priority, application Japan, Jan. 23, 1998, P10-011019

Int. Cl. G06F *13/00*

U.S. Cl. 710—52 **9 Claims**

1. A transmitting system wherein unitary data having an isochronous period for transmission of main data and an asynchronous period for transfer of command data is transmitted between a control apparatus and a target apparatus via a predetermined bus, wherein said control apparatus comprises



control apparatus sending means for sending a target apparatus identifier to identify said target apparatus using said asynchronous period and for sending a signal-level transfer request command to request transfer of a signal level from said target apparatus, and

said target apparatus comprises

target apparatus receiving means for receiving said target apparatus identifier transmitted using said asynchronous period from said control apparatus sending means via said predetermined bus, and for receiving said signal-level transfer request command, and

target apparatus sending means for sending said signal level in response to said signal-level transfer request command received by said target apparatus receiving means.

US 6,341,320 B1

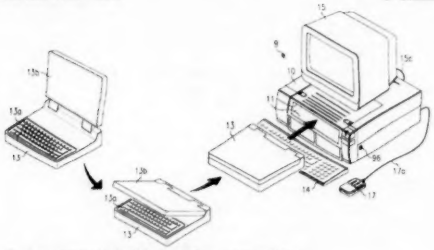
COMPUTER DOCKING STATION WITH PCMCIA CARD SLOT

LaVaughn F. Watts, Jr., Temple; Gary Verdun; Randall E. Juenger, both of Belton, and Tom Grimm, Temple, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of application No. 08/151,225, filed on Nov. 12, 1993, now Pat. No. 5,477,415. This application Nov. 8, 1994, Appl. No. 336,342.

Int. Cl. G06F *13/00;1/16*

U.S. Cl. 710—101 **3 Claims**



1. A computer docking station, comprising:

a docking station having connection means for coupling to an external monitor and an external keyboard;

means for connecting a portable computer to said docking station;

at least one PCMCIA card slot in said docking station;

a housing for holding said portable computer therein, said housing having connection means for coupling said docking station to said portable computer;

a tray adapted to receive said portable computer thereon slidably mounted to said housing; and

drive means coupled between said housing and said tray for driving said tray and said portable computer into and out of said housing and automatically mating said connection means of said housing to said connection means on said portable computer, said drive means includes a first drive means for driving said try in a first direction and a second drive means for a first connection means on said housing for driving said first connection means in a second orthogonal direction to a first connection means on said portable computer.

US 6,341,321 B1

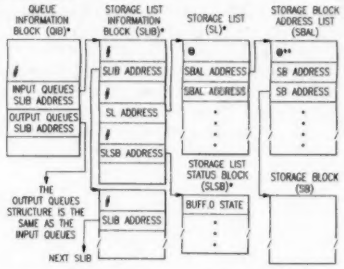
METHOD AND APPARATUS FOR PROVIDING CONCURRENT PATCH USING A QUEUED DIRECT INPUT-OUTPUT DEVICE

Steven G. Glassen, Wallkill; Jeffrey M. Turner, Poughkeepsie; Bruce H. Ratcliff, Red Hook, and Stephen R. Valley, Valatie, all of N.Y., assignors to *International Business Machines* Corporation, Armonk, N.Y.

Filed Feb. 22, 1999, Appl. No. 253,993

Int. Cl. G06F *13/00*

U.S. Cl. 710—104 **10 Claims**



1. In a computing network environment using microcode and having a queued direct I/O and a main memory in processing communication with an adapter, a method for providing concurrent patch comprising the steps of:

allowing install of a new level of microcode to an adapter without interrupting any running applications and/or services;

determining if said affected adapter is a network or a channel adapter;

if said adapter is a channel adapter, allowing all applications using said channel adapter to run without requiring any connection type information to be kept across any code updates;

if said adapter is determined to be a network Adapters, keeping all adapter sessions alive and activated while accessing information about any client station connected to a LAN and each present in said environment.

US 6,341,322 B1

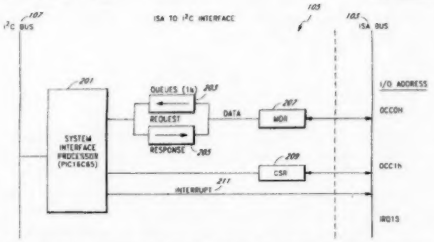
METHOD FOR INTERFACING TWO BUSES

Ji-hwan Liu, Cupertino; Ken Nguyen, San Jose; Karl S. Johnson, Palo Alto, and Mallikarjunan Mahalingam, Santa Clara, all of Calif., assignors to Micron Electronics, Inc., Nampa, Id.

Continuation of application No. 08/942,413, filed on Oct. 1, 1997, now Pat. No. 5,987,554, Provisional application No. 60/046,397, filed on May 13, 1997, Provisional application No. 60/047,016, filed on May 13, 1997, Provisional application No. 60/046,416, filed on May 13, 1997, Provisional application No. 60/046,311, filed on May 13, 1997, Provisional application No. 60/046,491, filed on May 13, 1997. This application Feb. 25, 1999, Appl. No. 258,095.

Int. Cl. G06F *13/00*

U.S. Cl. 710—129 **16 Claims**



1. A method of controlling the transfer of information between one or more processors on a first bus and one or more processors on a second bus through an interface having an interface processor, comprising:

writing information to be transferred across the interface from a second processor on the second bus to a first processor on the first bus to a request buffer;

writing a command from the second processor via the second bus to the interface processor to transfer the information residing in the request buffer to the first processor via the first bus;

writing information to be transferred across the interface from the first processor on the first bus to the second processor on the second bus to a response buffer; and

reading the information in the response buffer via the second bus.

US 6,341,323 B2

INFORMATION PROCESSING SYSTEM

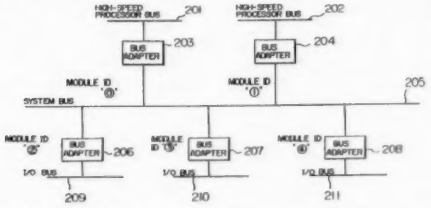
Nobukazu Kondo, Ebina; Seiji Kaneko, Yokohama; Koichi Okazawa, Tokyo; Hideaki Gemma, Hadano; Tetsuya Mochida, Yokohama, and Takehisa Hayashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of application No. 09/514,351, filed on Feb. 28, 2000, now Pat. No. 6,219,738, which is a continuation of application No. 09/296,660, filed on Apr. 23, 1999, now Pat. No. 6,128,688, which is a continuation of application No. 09/203,621, filed on Dec. 1, 1998, now Pat. No. 5,941,973, which is a continuation of application No. 08/847,974, filed on Apr. 21, 1997, now Pat. No. 5,881,255, which is a continuation of application No. 08/544,727, filed on Oct. 18, 1995, now Pat. No. 5,671,371, which is a continuation of application No. 08/016,692, filed on Feb. 11, 1993, now abandoned. This application Feb. 7, 2001, Appl. No. 777,960.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *13/00*

U.S. Cl. 710—129 **13 Claims**



1. An information processing system comprising:

a processor;

a processor bus which is coupled to said processor, and which operates under a first split bus protocol;

a device;

a system bus which is coupled to said device, and which operates under a second split bus protocol; and

a bus adapter which includes a processor bus interface coupled to said processor bus and a system bus interface coupled to said system bus, and which couples said processor bus with said system bus.

US 6,341,324 B1

EXCEPTION PROCESSING IN SUPERSCALAR MICROPROCESSOR

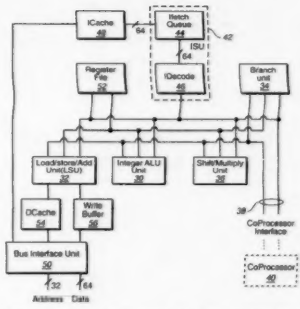
Robert L. Caulk, Jr., Livermore; Hidetaka Magoshi, San Jose, and Kevin L. Daberkow, Fremont, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 6, 1995, Appl. No. 540,349

Int. Cl. G06F *13/00*

U.S. Cl. 710—260 **16 Claims**

1. A method of handling exceptions in a microprocessor system having a core central processing unit (CPU) and a coprocessor for system control comprising the steps of:



a) suspending a normal sequence of instruction by said CPU,

b) loading an exception program counter with a restart location for use after the exception is serviced,

c) saving the context of the current operating state of said CPU, and

d) enabling said coprocessor to service the interrupt by loading a status register with operating mode and interrupt enabling bits.

US 6,341,325 B2

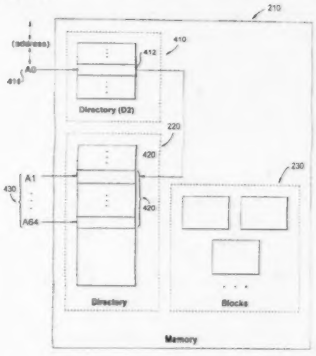
METHOD AND APPARATUS FOR ADDRESSING MAIN MEMORY CONTENTS INCLUDING A DIRECTORY STRUCTURE IN A COMPUTER SYSTEM

Peter A. Franaszek, Mount Kisco, and John T. Robinson, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 12, 1999, Appl. No. 229,057

Int. Cl. G06F *12/02*

U.S. Cl. 711—3 **20 Claims**

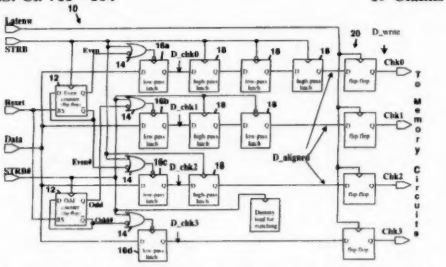


1. In a computer system having a CPU and implementing main memory for storing compressed and uncompressed data, said memory accessible by means of a first directory structure included in said memory, wherein CPU generated real memory addresses are translated to one or more physical memory locations using said first directory structure in a manner transparent to said CPU, a system for accessing contents of the first directory structure comprising a second directory structure provided in main memory, said second directory structure including one or more entries with each entry formatted to provide addressability to a predetermined number of entries in said first directory structure and enable direct access to contents of said entries by said CPU, said second directory structure responsive to said CPU generated real memory addresses.

US 6,341,326 B1
METHOD AND APPARATUS FOR DATA CAPTURE USING LATCHES, DELAYS, PARALLELISM, AND SYNCHRONIZATION

Cangsang Zhao, Portland, Oreg., and Jeffrey K. Greason, Tehachapi, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 23, 1998, Appl. No. 221,229
Int. Cl. G06F *13/14*
U.S. Cl. 711—104 **19 Claims**



1. A method of data capture in a system having a core clock, comprising:

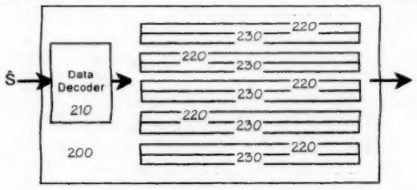
using a strobe signal to generate a pair of clocking signals and using the combination of the strobe and clocking signals to control the latching of successive serial data chunks into an n integer number of input data latches, respectively, such that a data chunk is latched one per each cycle of the core clock and so that every n data chunks form a group of parallel data; and

delaying certain ones of the data chunks latched into the input data latches long enough to permit all data chunks in a group to be transferred in parallel to a further circuit, wherein the parallel transfer takes place once every n cycles of the clock, the first data chunk in each successive group of data chunks arrives at a first latch of the n data latches n clock cycles of the clock after the first data chunk of the preceding group, and the delay is accomplished using two or more groups of delay latches with each group respectively connected to the output of each of two or more of the n data latches, wherein the latches in each group are connected in series and each group has one fewer delay latch than the one associated with a preceding one of the n data latches.

US 6,341,327 B1
CONTENT ADDRESSABLE MEMORY ADDRESSABLE BY REDUNDANT FORM INPUT

David J. Sager, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 13, 1998, Appl. No. 133,602
Int. Cl. G06F *12/02*
U.S. Cl. 711—108 **7 Claims**



1. A content addressable memory, comprising:

a redundant form data decoder having an input and a plurality of decoded data lines at an output,

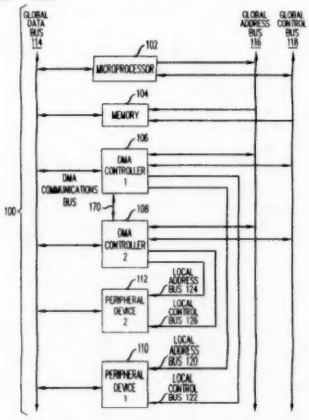
a register, and

match detection logic coupled to the decoded data lines and to the register, comprising a selection switch for each bit position stored in the register, the selection switch having inputs connected to decoded data lines associated with the bit position, wherein the selection switch of a least significant bit position of the register controlled by a value of the stored at the least significant bit position and an input carry value and the remaining selection switches are controlled respectively by the values stored in the register at the bit position associated with the switch and an adjacent bit position.

US 6,341,328 B1
METHOD AND APPARATUS FOR USING MULTIPLE CO-DEPENDENT DMA CONTROLLERS TO PROVIDE A SINGLE SET OF READ AND WRITE COMMANDS

Daniel Nelson Heer, Newton, N.H., assignor to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Apr. 20, 1999, Appl. No. 295,010
Int. Cl. G06F *12/00*
U.S. Cl. 711—112 **9 Claims**



1. A microcomputer system, for transferring a data block from a memory to a first and second peripheral device, the system comprising:

processing unit initializing first and second DMA controllers for co-dependent operation;

said first DMA controller and said second DMA controller coordinating operations by communicating over a DMA communications bus;

said first DMA controller reading the data element over a global data bus from an address in the memory and providing control signals to the first peripheral device over a first local control bus; and

said first DMA controller writing the data element in a single write cycle over the global data bus to the first peripheral device and the second peripheral device wherein said first and second DMA controllers communicate over the DMA commnunications bus via control signals, said control signals including:

a hold signal by which said first DMA controller requests permission to write the data element;

a hold-acknowledge signal by which said second DMA controller grants said first DMA controller said permission; and

a start signal for said first DMA controller to signal the start of data transfer wherein said first DMA controller also provides address signals to the first peripheral device over a first local address bus, and said second DMA controller provides address signals to said second peripheral device over a second local address bus.

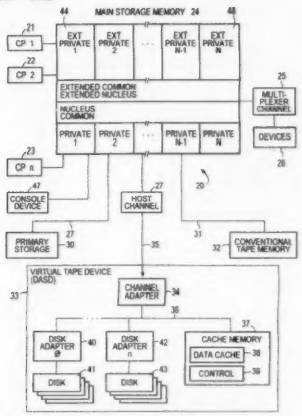
US 6,341,329 B1
VIRTUAL TAPE SYSTEM

Douglas E. LeCrone, Foxborough, Mass.; Shai Hess, Od Asharon, and Elcana Cohen, Tel Aviv, both of Israel, assignors to EMC Corporation, Hopkinton, Mass.

Continuation of application No. 09/053,964, filed on Apr. 2, 1998, now Pat. No. 6,070,224. This application Feb. 9, 2000, Appl. No. 501,509.

Int. Cl. G06F *12/08*

U.S. Cl. 711—112 **20 Claims**



1. A method for emulating a first data storage device with first characteristics and responsive to individual first requests in a first set of input-output requests with a second data storage device with second characteristics and responsive to individual second requests in a second set of input-output requests wherein a host with a main storage memory and at least one central processor includes means for issuing the first and second requests, said method comprising the steps of:

A) intercepting in the host each first request from the host,

B) for each first request that identifies a first storage device being emulated by the second storage device:

i) building in the host at least one second request according to the characteristics of the second data storage device,

ii) transferring the at least one second request to the second data storage device from the host

iii) signalling to the host the completion of each operation initiated by each of the at least one second requests, and,

iv) signalling to the host, upon the completion of all of the at least one second requests associated with the first request, the completion of the corresponding operation in response to the first request whereby the operation of the second data storage device emulates the operation of the first data storage device and acts as a virtual first data storage device, and

C) for each first request for other first storage devices transferring the first request and signalling to the host the completion of the operation initiated in response to the first request.

US 6,341,330 B1
METHOD AND SYSTEM FOR CACHING A SELECTED VIEWING ANGLE IN A DVD ENVIRONMENT

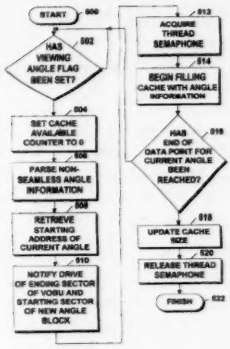
Linden A. deCarmo, Plantation, Fla., assignor to Oak Technology, Inc., Sunnyvale, Calif.

Filed Jul. 27, 1998, Appl. No. 122,812

Int. Cl. G06F *12/00*

U.S. Cl. 711—113 **12 Claims**

1. A caching apparatus utilized in a digital versatile disk (DVD) system having a DVD reader for generating a DVD data stream comprising data related to multiple viewing angles within said data stream, the apparatus comprising:


START
HAS VIEWING ANGLE FLAG BEEN SET?
SET CACHE AVAILABLE COUNTER TO 0
PARSE NON-SEAMLESS ANGLE INFORMATION
RETRIEVE STARTING ADDRESS OF CURRENT ANGLE
NOTIFY DRIVE OF ENDING SECTOR OF VOBU AND STARTING SECTOR OF NEW ANGLE BLOCK
ACQUIRE THREAD SEMAPHONE
BEGIN FILLING CACHE WITH ANGLE INFORMATION
HAS END OF DATA POINT FOR CURRENT ANGLE BEEN REACHED?
UPDATE CACHE SIZE
RELEASE THREAD SEMAPHONE
FINISH

a caching load thread for receiving the DVD data stream, parsing angle information from the data stream relating to a selected viewing angle, retrieving a starting address for the selected viewing angle to begin caching, and for extracting a data portion of the DVD data stream associated with the selected viewing angle from the multiple viewing angles;

program logic configured for storing the selected data portion within the cache apparatus; and

a user request thread for downloading the selected data portion stored within the cache apparatus, the data portion being that of only the selected viewing angle.

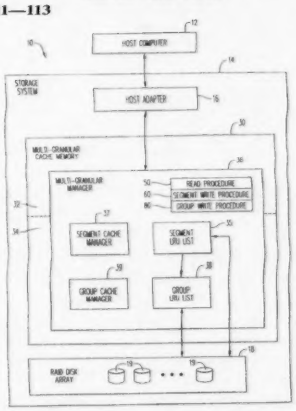
US 6,341,331 B1
METHOD AND SYSTEM FOR MANAGING A RAID STORAGE SYSTEM WITH CACHE

Bruce McNutt, Gilroy, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1999, Appl. No. 410,499

Int. Cl. G06F *12/00*

U.S. Cl. 711—113 **21 Claims**



8. A multi-granular cache memory system that is located in a data path between a host computer and a storage device, said multi-granular cache memory system comprising:

a cache memory that is logically partitioned into a first cache and a second cache; and

a multi-granular manager for processing requests from said host computer for access to data, said multi-granular manager performing a procedure that includes:

in response to a request from said host computer to access data, determining if said requested data is stored in said

first cache and if said requested data is not stored in said first cache, determining if said requested data is stored in said second cache;

if said requested data is not stored in said second cache, accessing a group of segments stored in said storage device, a first segment included in said group of segments including said requested data;

storing said group of segments in said second cache and storing said first segment that includes said requested data in said first cache; and

accessing said requested data from said first cache if in response to said request from said host computer to access data, it is determined that said requested data is stored in said first cache, or after storing said group of segments in said second cache and storing said first segment that includes said requested data in said first cache.

US 6,341,332 B2

DISK ARRAY CONTROLLER WITH CONNECTION PATH FORMED ON CONNECTION REQUEST QUEUE BASIS

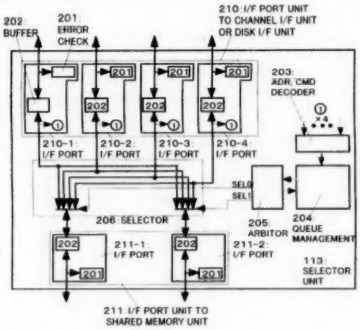
Kazuhisa Fujimoto, Kodaira, and Akira Fujibayashi, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of application No. 09/334,599, filed on Jun. 17, 1999. This application Jan. 10, 2001, Appl. No. 756,748.

Claims priority, application Japan, Jun. 19, 1998, 10-189957

Int. Cl. G06F *12/00*

U.S. Cl. 711—113 **1 Claim**



1. A disk array controller comprising:

first interface units to be connected to a host computer;

second interface units to be connected to a plurality of disk drives;

a cache memory unit for temporarily storing data to be stored in the disk drives or data stored in the disk drives; and

a selector unit provided between said first and second interface units and said cache memory unit,

wherein said selector unit comprises:

a plurality of first ports to be connected to said first and second interface units,

a plurality of second ports to be connected to said cache memory unit, and

means for connecting, if a first connection request for one port a of the second ports is issued from any one of the first ports, thereafter a second connection request for the port A is issued from any one of the first ports, and thereafter a third connection request for another port B different from the port A of the second ports is issued from any one of the first ports, the port A to the port from which the first connection request was issued, and the port B to the port from which the third connection request was issued.

US 6,341,333 B1

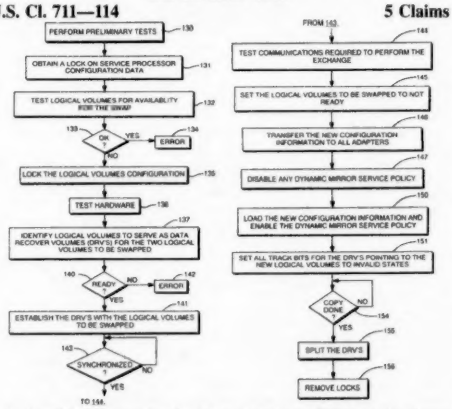
METHOD FOR TRANSPARENT EXCHANGE OF LOGICAL VOLUMES IN A DISK ARRAY STORAGE DEVICE

Moshe Schreiber; Ishay Kedem, both of Brookline; Yuval Ofek, Framingham; Natan Vishlitzky, and Eli Shagam, both of Brookline, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Continuation-in-part of application No. 09/143,684, filed on Aug. 28, 1998, now Pat. No. 6,237,063, which is a continuation-in-part of application No. 09/002,428, filed on Jan. 2, 1998, now Pat. No. 6,088,766, which is a continuation-in-part of application No. 08/944,606, filed on Oct. 6, 1997, now Pat. No. 6,061,761. This application Sep. 15, 1999, Appl. No. 396,218.

Int. Cl. G06F *12/00*

U.S. Cl. 711—114 **5 Claims**


PERFORM PRELIMINARY TESTS
OBTAIN A LOCK ON SERVICE PROCESSOR CONFIGURATION DATA
TEST LOGICAL VOLUMES FOR AVAILABILITY FOR THE SWAP
OK ?
YES
NO
ERROR
LOCK THE LOGICAL VOLUMES CONFIGURATION
TEST HARDWARE
IDENTIFY LOGICAL VOLUMES TO SERVE AS DATA RECOVER VOLUMES (DRV'S) FOR THE TWO LOGICAL VOLUMES TO BE SWAPPED
READY ?
NO
YES
ERROR
ESTABLISH THE DRV'S WITH THE LOGICAL VOLUMES TO BE SWAPPED
SYNCHRONIZED ?
NO
YES
TO 144.
FROM 143.
TEST COMMUNICATIONS REQUIRED TO PERFORM THE EXCHANGE
SET THE LOGICAL VOLUMES TO BE SWAPPED TO NOT READY
TRANSFER THE NEW CONFIGURATION INFORMATION TO ALL ADAPTERS
DISABLE ANY DYNAMIC MIRROR SERVICE POLICY
LOAD THE NEW CONFIGURATION INFORMATION AND ENABLE THE DYNAMIC MIRROR SERVICE POLICY
SET ALL TRACK BITS FOR THE DRV'S POINTING TO THE NEW LOGICAL VOLUMES TO INVALID STATES
COPY DONE ?
NO
YES
SPLIT THE DRV'S
REMOVE LOCKS

1. A method for exchanging data stored in a first logical volume having a first data processing identification with data stored in a second logical volume having a second data processing identification comprising the steps of:

A) establishing a data transfer path between the first logical volume and a third logical volume and a data transfer path between the second logical volume and a fourth logical volume,

B) copying the data in the first and second logical volumes to the third and fourth logical volumes, respectively, independently of and concurrently with responses to I/O requests to the first and second logical volumes,

C) disabling data transfers to the first and second logical volumes whereby I/O requests are directed to be processed by the third and fourth logical volumes, respectively,

D) configuring the first logical volume to have the second data processing identification and the second logical volume to have the first data processing identified, and

E) transferring data in the third logical volume to the second logical volume with the first data processing identification and the data in the fourth logical volume to the first logical volume with the second data processing identification.

US 6,341,334 B1

BRIDGE METHOD, BUS BRIDGE, AND MULTIPROCESSOR SYSTEM

Toshihisa Kamemaru, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1998, Appl. No. 178,493

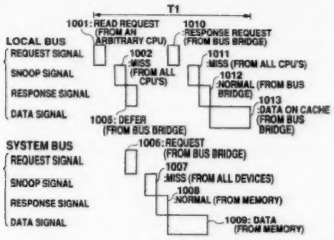
Claims priority, application Japan, Mar. 24, 1998, 10-075168

Int. Cl. G06F *13/16*

U.S. Cl. 711—137 **23 Claims**

1. A bridge method comprising:

predictively caching into a bridge cache located within a bus bridge bridging between first and second buses, a portion of



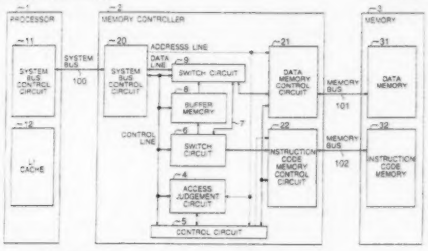
data in a device connected to the second bus, by issuing an anticipatory request signal requesting that data, based on a prediction concerning contents of a request signal which may be issued in the future by one of a plurality of devices connected to the first bus, and transmitting the anticipatory request from the bus bridge to the second bus; and

before transmitting to the first bus the data cached in the bridge cache in response to the anticipatory request signal when a request signal is actually issued by one of the devices connected to the first bus and requesting the data cached, transmitting a response request to the devices connected to the first bus to confirm that the data requested is not found in any device connected to the first bus, and, if confirmed, transmitting the requested data to the device connected to the first bus that has requested the requested data.

US 6,341,335 B1
INFORMATION PROCESSING SYSTEM FOR READ AHEAD BUFFER MEMORY EQUIPPED WITH REGISTER AND MEMORY CONTROLLER

Hiroki Kanai, Machida; Yasuo Inoue, Odawara, and Yoshifumi Takamoto, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1998, Appl. No. 181,676
Claims priority, application Japan, Oct. 29, 1997, 9-296653
Int. Cl. G06F *12/00;12/14;13/38;9/30;13/40*
U.S. Cl. 711—137 **2 Claims**



1. An information processing system comprising:

a processor;

a memory; and

a memory controller connected with said processor via a first bus and connected with said memory via a second bus for controlling said memory,

wherein said memory controller comprises a buffer memory and a control circuit, and said control circuit is controlled, before a memory access is carried out from said processor, to estimate an address to be possibly accessed next on the basis of addresses previously accessed and to prefetch data stored in said memory into said buffer memory, in accordance with said estimated address wherein said data has a data size of twice or more an access unit of said processor, said memory controller further comprising a register to instruct start or stop of the prefetch of said data stored in said memory into said buffer memory,

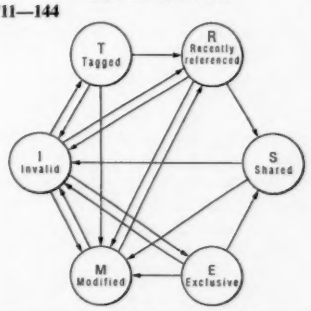
wherein said memory controller comprises a direct path for transmitting data directly to said processor from said memory therethrough; said control circuit, when the access from said processor hits data within said buffer memory, is controlled to transfer the data to said processor, whereas, said control circuit, when the access from said processor fails to hit data within said buffer memory, is controlled to transfer data within said memory to said processor via said direct path,

wherein said control circuit is controlled, when the access from said processor fails to hit data within said buffer memory, to transfer data from said processor to said memory through said direct path and also to clear data within said buffer memory to perform read-ahead operation to said buffer memory.

US 6,341,336 B1
CACHE COHERENCY PROTOCOL HAVING TAGGED STATE USED WITH CROSS-BARS

Ravi Kumar Arimilli, Austin; John Steven Dodson, Pflugerville, and Jerry Don Lewis, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1998, Appl. No. 24,676
This patent is subject to a terminal disclaimer.
Int. Cl. G06F *12/14*
U.S. Cl. 711—144 **18 Claims**



1. A method of maintaining cache coherency in a multiprocessor computer system having a plurality of processing units, each processing unit having at least one cache, comprising the steps of:

issuing a request indicating that a first processing unit having a first cache line desires to read a value associated with an address of a memory device of the computer system;

transmitting a plurality of responses to the request, including an intervention response indicating that a second cache line in a second processing unit contains a modified value corresponding to the address of the memory device and that the modified value should not be written to the memory device when sourced; and

forwarding the intervention response only to selected caches that could be affected by the intervention response.

US 6,341,337 B1
APPARATUS AND METHOD FOR IMPLEMENTING A SNOOP BUS PROTOCOL WITHOUT SNOOP-IN AND SNOOP-OUT LOGIC

Fong Pong, Mountain View, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jan. 30, 1998, Appl. No. 16,208
Int. Cl. G06F *12/00;13/00*
U.S. Cl. 711—146 **8 Claims**

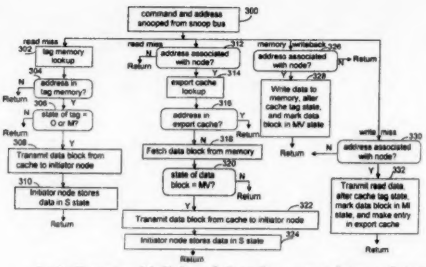
1. A computer system comprising:

a snoop bus;

a plurality of nodes connected to the snoop bus, each node comprising:

a processor;

a main memory unit including a shared memory region associated with a respective node, the shared memory region



including a multiplicity of shared memory datums that may be exported to one or more other nodes;

a cache memory including a portion of the shared memory associated with the node and a portion of the shared memory associated with another node;

a tag memory associated with the cache memory of the node, the tag memory storing one or more cache memory identifiers, each cache memory identifier identifying a cache memory datum stored in the cache memory of the node; and

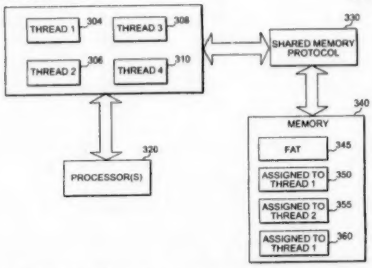
a memory access unit associated with the main memory unit of the node, the memory access unit storing one or more main memory identifiers, each main memory identifier identifying a shared memory datum associated with the respective node that was exported to the cache memory of another node that modified the shared memory datum;

wherein when a read miss occurs an address is broadcasted on the snoop bus from an initiator node, the node associated with the broadcasted address fetches data stored in the associated main memory unit and transmits the fetched data to the initiator node when a main memory identifier associated with the broadcasted address is not found in the memory access unit.

US 6,341,338 B1
PROTOCOL FOR COORDINATING THE DISTRIBUTION OF SHARED MEMORY

Shaun Dennie, Westminster, Colo., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Feb. 4, 1999, Appl. No. 244,135
Int. Cl. G06F *12/00*
U.S. Cl. 711—147 **14 Claims**



1. A method for allocating blocks of a shared memory in a data processing system, the system including a first process containing a first thread, and a second process containing a second thread, wherein the first and second process are assigned a first and second process identification code, respectively, the method comprising:

accessing by the first thread a file allocation table in the shared memory to secure access to a first block of the shared memory based on the determination that a token to secure memory access is available to the first thread;

securing the token by the first thread based on the determination;

assigning, by the file allocation table, a first memory location code to the first thread, wherein the memory location code corresponds to a memory location of the first block;

incrementing by the first thread a counter maintained in the file allocation table, wherein the counter points to an available memory block within the shared memory;

releasing the token by the first thread;

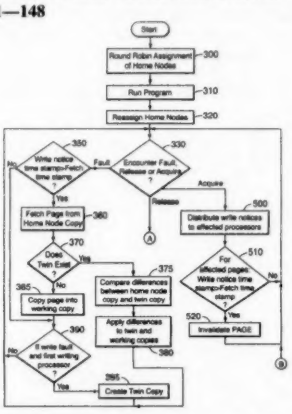
securing the token by the second thread; and

assigning, by the file allocation table, a second memory location code to the second thread, wherein the second memory location code corresponds to a memory location of the available memory block within the shared memory, and wherein assigning the second memory location code takes place while the first thread accesses the first block of the shared memory.

US 6,341,339 B1
APPARATUS AND METHOD FOR MAINTAINING DATA COHERENCE WITHIN A CLUSTER OF SYMMETRIC MULTIPROCESSORS

Leonidas Kontothanassis, Belmont, Mass.; Michael L. Scott, Rochester, N.Y.; Robert Stets, Rochester, N.Y.; Sandhya Dwarkadas, Rochester, N.Y.; Nikos Hardavellas, Belmont, Mass., and Galen Hunt, Bellevue, Wash., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 26, 1998, Appl. No. 48,232
Int. Cl. G06F *12/00;17/30;15/16;1/12*
U.S. Cl. 711—148 **13 Claims**



1. A method for maintaining coherence of data within a shared memory network, comprising the steps of:

providing a home node copy of a group of data at a first electronic node, the home node copy representing a master copy of the group of data generated at the first electronic node;

storing a working copy of at least a first portion of the master copy at a second electronic node;

storing a twin copy of the working copy at the second electronic node;

fetching the master copy from the first electronic node;

determining a difference between the fetched master and the twin copy;

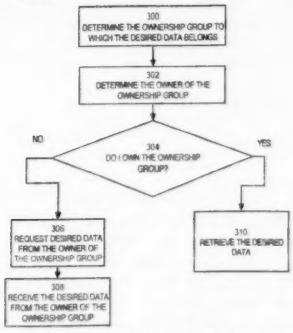
writing the determined difference to the working copy; and

writing the determined difference to the twin copy.

US 6,341,340 B1
TRANSITIONING OWNERSHIP OF DATA ITEMS BETWEEN OWNERSHIP GROUPS

Alex Tsukerman, Foster City; Gary C. Ngai, Saratoga; Gianfranco Putzolu, San Francisco, and J. William Lee, Foster City, all of Calif., assignors to Oracle Corporation, Redwood Shores, Calif.

Filed Dec. 28, 1998, Appl. No. 222,593
Int. Cl. G06F *12/00*
U.S. Cl. 711—150 **24 Claims**


300
DETERMINE THE OWNERSHIP GROUP TO WHICH THE DESIRED DATA BELONGS
302
DETERMINE THE OWNER OF THE OWNERSHIP GROUP
NO
304
DO I OWN THE OWNERSHIP GROUP?
YES
306
REQUEST DESIRED DATA FROM THE OWNER OF THE OWNERSHIP GROUP
308
RECEIVE THE DESIRED DATA FROM THE OWNER OF THE OWNERSHIP GROUP
310
RETRIEVE THE DESIRED DATA

1. A method for transitioning ownership of a data item, the method comprising the steps of:

a) disabling access to the data item;

b) waiting for all transactions that have made changes to the data item to either commit or abort;

c) if any transactions that made changes to the data item abort, then removing all changes to the data item that were made before access to the data item was disabled by the transactions that abort;

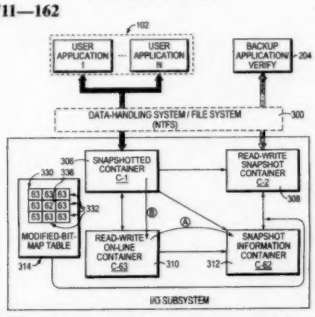
d) changing data that indicates ownership of the data item from a first owner to a second owner; and

e) enabling access to the data item.

US 6,341,341 B1
SYSTEM AND METHOD FOR DISK CONTROL WITH SNAPSHOT FEATURE INCLUDING READ-WRITE SNAPSHOT HALF

Jeffrey L. Grummon, Milford, and Chris R. Franklin, Merrimack, both of N.H., assignors to Adaptec, Inc., Milpitas, Calif.

Filed Dec. 16, 1999, Appl. No. 465,354
Int. Cl. G06F *12/16*
U.S. Cl. 711—162 **10 Claims**



1. A system for backup of data employing a snapshot based upon a copy-on-write process in the presence of a data-handling system having a backup application arranged to provide write data to a backup disk, the system comprising:

an original read-write container;

a snapshotted container that receives write data from and provides read data to the data-handling system based upon accessing of the original read-write container by an application;

a read-write snapshot container that stores a real-time copy of data contained in the snapshotted container, data residing on the snapshot container being read by the backup application and the snapshot container being written-to by the backup application at predetermined times with the write data thereof;

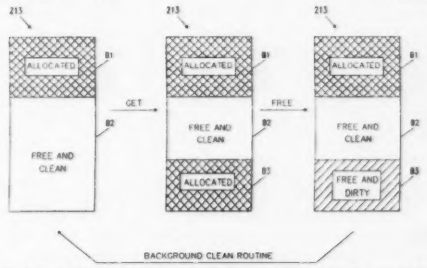
a snapshot information container that stores data from the original read-write data and that stores write data of the backup application received from the snapshot container; and

a bit-map associated with the snapshot information container that maps data storage blocks therein as associated with either of the original read-write container or the write data of the backup application.

US 6,341,342 B1
METHOD AND APPARATUS FOR ZEROING A TRANSFER BUFFER MEMORY AS A BACKGROUND TASK

Mark J. Thompson, Harris County, Tex., and Vincent J. Zimmer, King County, Wash., assignors to Compaq Information Technologies Group, L.P., Houston, Tex.

Filed Nov. 4, 1997, Appl. No. 963,862
Int. Cl. G06F *9/312*
U.S. Cl. 711—166 **13 Claims**



1. A controller that cleans buffer memory as a background task, comprising:

a transfer buffer;

a memory that stores an index table indicating free and non-zero data sectors within said transfer buffer; and

processing logic coupled to said transfer buffer and said memory that uses said transfer buffer for data transfer operations, and when otherwise idle, that scans said index table for contiguous sections of free and non-zero data sectors of said transfer buffer and that zeroes at least one of said contiguous sections of free and non-zero data sectors without accessing a host bus.

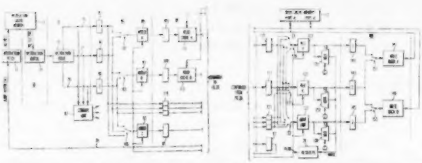
US 6,341,343 B2
PARALLEL PROCESSING INSTRUCTIONS ROUTED THROUGH PLURAL DIFFERING CAPACITY UNITS OF OPERAND ADDRESS GENERATORS COUPLED TO MULTI-PORTED MEMORY AND ALUS

Kenneth K. Munson, Saratoga, Calif., assignor to Rise Technology Company, Santa Clara, Calif.

Division of application No. 09/151,634, filed on Sep. 11, 1998, which is a continuation-in-part of application No. 09/062,804, filed on Apr. 20, 1998, now abandoned. This application Apr. 26, 2001, Appl. No. 842,107.
Int. Cl. G06F *9/38*
U.S. Cl. 712—21 **10 Claims**

1. A microprocessor formed on a single integrated circuit chip, comprising:

an instruction memory adapted to provide a sequence of instructions to be executed,



an instruction issuing stage coupled to the instruction memory for making a set of three instructions stored therein available in parallel during a common interval for processing,

a data memory having first and second ports for simultaneous access therethrough to read operands therefrom,

three address generation stages, two of said address generation stages having individual outputs connected to address the data memory respectively through said first and second ports thereof and read operands therefrom, a remaining one of the address generation stages not having access to read operands stored in the data memory,

three arithmetic logic unit (ALU) stages, one of said three ALUs having less processing capability than the other two of said three ALUs, and

an interconnection circuit responsive to each set of three instructions made available by the instruction issuing stage (a) for routing up to two of the three instructions needing operands from the data memory through the two address generation stages having outputs connected to address the data memory, (b) for connecting two operands read from the data memory to any two of the ALUs having sufficient processing capability to execute their associated instructions, and (c) for routing a remaining one of the three instructions not requiring an operand either to a remaining one of the address generation stages or a remaining one of the ALUs, thereby to process the set of three instructions in parallel.

US 6,341,344 B1

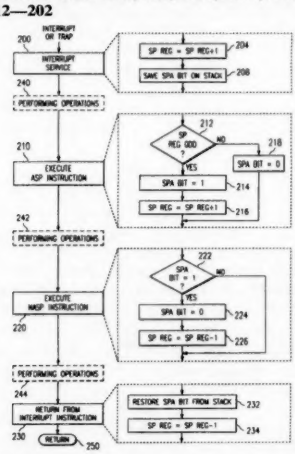
APPARATUS AND METHOD FOR MANIPULATING DATA FOR ALIGNING THE STACK MEMORY

Alexander Tessarolo, Sydney, Australia, and Mahesh Mehendale, Bangalore, India, assignors to Texas Instruments Incorporated, Dallas, Tex.

Provisional application No. 60/078,699, filed on Mar. 20, 1998. This application Mar. 18, 1999, Appl. No. 271,386.

Int. Cl. G06F *9/06;9/32;12/12;12/04;12/02*

U.S. Cl. 712—202 **14 Claims**



1. A method for manipulating data from a processor on a stack memory, the method comprising:

aligning a stack pointer in said stack memory to a first memory address in said stack memory;

incrementing said stack pointer to a second memory address to create an empty memory address in said stack memory;

saving data from at least one register into said stack memory at said second memory address indicated by said stack pointer;

performing processor operations;

restoring data from said stack memory into said at least one register after completion of said processor operations;

decrementing said stack pointer from said second memory location to said first memory location wherein said empty memory address in said stack memory is removed;

aligning said stack pointer to a new memory address when said stack pointer indicates only an odd address after said saving step is complete; and

unaligning said stack pointer from said new memory address to said odd address.

US 6,341,345 B1

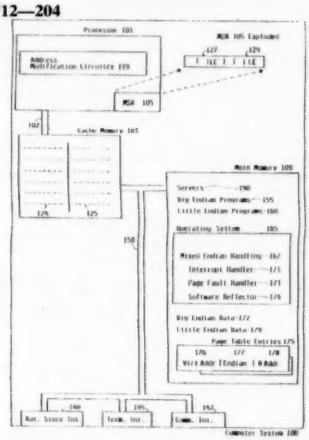
MIXED-ENDIAN COMPUTER SYSTEM THAT PROVIDES CROSS-ENDIAN DATA SHARING

Marc Alan Auslander, Millwood, N.Y., and Larry Wayne Loen, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application No. 08/393,968, filed on Feb. 24, 1995, now Pat. No. 5,928,349. This application Jun. 7, 1995, Appl. No. 475,669.

Int. Cl. G06F *12/02*

U.S. Cl. 712—204 **6 Claims**



1. A computer system, said computer system comprising:

a conventional bi-endian processor, said processor being used to execute a plurality of tasks, said tasks including big endian tasks and little endian tasks;

memory, said memory being divided into a plurality of storage appropates, said plurality of storage aggregates containing data, said data including big endian data and little endian data, said plurality of storage aggregates including markings, said markings indicating whether said storage aggregates contain data formatted as big endian data or contain data formatted as little endian data, said memory comprising big endian programs and little endian programs, said big endian programs executing as said big endian tasks and said little endian programs executing as said little endian tasks, said tasks executing on a task-for-task basis directly on said conventional bi-endian processor;

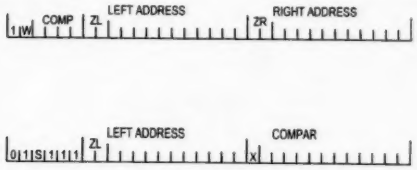
a memory management mechanism, said memory management mechanism using said markings to allow said big endian programs to share said big endian data with said little endian programs.

US 6,341,346 B1

METHOD FOR COMPARISON BETWEEN A PATTERN SEQUENCE AND A VARIABLE LENGTH KEY

Alain Benayoun, Cagnes-sur-mer; Jean-Francois Le Pennec, Nice; Patrick Michel, La Gaude, and Claude Pin, Nice, all of France, assignors to Cisco Technology, Inc., San Jose, Calif.

Filed Feb. 5, 1999, Appl. No. 245,182
Int. Cl. G06F *9/305*
U.S. Cl. 712—223 13 Claims



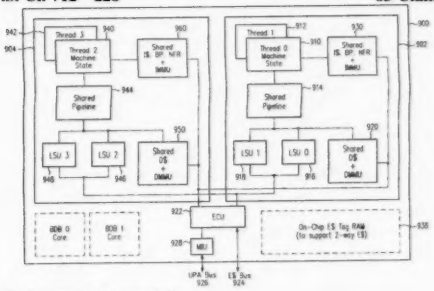
1. A method for comparing a pattern sequence with a variable length key wherein, a first bit of said pattern sequence is identified by a pointer, the length and a location of said key are identified by a code word (W, S), comprising the steps of identifying said sequence and comparing said pattern sequence with said variable length key to determine if they match.

US 6,341,347 B1

THREAD SWITCH LOGIC IN A MULTIPLE-THREAD PROCESSOR

William N. Joy, Aspen, Colo.; Marc Tremblay, Menlo Park, Calif.; Gary Lauterbach, Los Altos, Calif., and Joseph I. Chamdani, Santa Clara, Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed May 11, 1999, Appl. No. 309,733
Int. Cl. G06F *9/30;9/38;9/52;9/48*
U.S. Cl. 712—228 65 Claims



1. A processor comprising:

a multiple-thread execution pipeline including a plurality of pipelines respectively allocated to a plurality of execution threads; and

a thread switch logic coupled to the multiple-thread execution pipeline, the thread switch logic that switches execution threads according to a thread switching mode selected from among a plurality of thread switching modes.

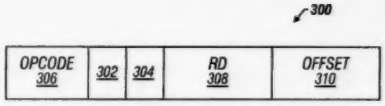
US 6,341,348 B1

SOFTWARE BRANCH PREDICTION FILTERING FOR A MICROPROCESSOR

Marc Tremblay, Menlo Park, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Dec. 3, 1998, Appl. No. 204,792
Int. Cl. G06F *15/00*
U.S. Cl. 712—239 16 Claims

1. A process for software branch prediction filtering for a microprocessor, comprising:



determining whether the branch is easy to predict; and

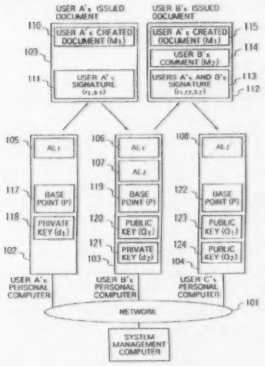
predicting the branch using software branch prediction if the branch is easy to predict, wherein predicting the branch further comprises modifying a software branch prediction bit.

US 6,341,349 B1

DIGITAL SIGNATURE GENERATING/VERIFYING METHOD AND SYSTEM USING PUBLIC KEY ENCRYPTION

Kazuo Takaragi, Ebina, and Hiroyuki Kurumatani, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1997, Appl. No. 961,557
Claims priority, application Japan, Oct. 31, 1996, 8-290525
Int. Cl. G06F *1/24*
U.S. Cl. 713—168 25 Claims



1. A digital signature generating method for generating a digital signature authenticating electronically a signature affixed to a given message, M, by resorting to a public key encryption scheme, comprising the steps of:

determining for said message, M, a first hash value, e, satisfying a condition that e=H(M) by using a first hash function, H;

determining for a numerical value, x, obtained from translation of a random number and independent of said message, a second hash value, r, satisfying a condition that r=h(x) by using a second hash function, h, whose output value is shorter than that of said first hash function, H, said second hash value being independent of said message; and

arithmetically determining and outputting said digital signature by using said first hash value, e, and said second hash value, r, as determined.

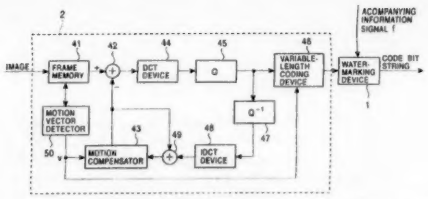
US 6,341,350 B1

DEVICE AND METHOD FOR PROCESSING IMAGE DATA, TRANSMITTING MEDIUM, AND RECORDING MEDIUM

Nobuyoshi Miyahara, Kanagawa, and Yoichi Yagasaki, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 1, 1998, Appl. No. 144,855
Claims priority, application Japan, Sep. 2, 1997, 9-252819
Int. Cl. G06F *01/24*
U.S. Cl. 713—176 22 Claims

1. An image processing device for embedding a watermark into encoded image data, comprising:



an encoder for encoding input image data into encoded image data; and

a watermarking device for embedding said watermark into the encoded image data in accordance with an accompanying information signal, said watermarking device comprising:

a decoder for partially decoding said encoded image data to locate a position within said encoded image data to embed said watermark;

a watermark image generator for setting a first watermark value and a second watermark value to predetermined values in accordance with said accompanying information signal;

a watermark pattern matching controller for selecting an area within said encoded image data starting at said position located by said decoder and corresponding to a blocked watermark pattern; and

said watermark image generator embedding said watermark by modifying each pixel of said encoded image data within the selected area by said first watermark value or said second watermark value on the basis of said blocked watermark pattern.

US 6,341,351 B1

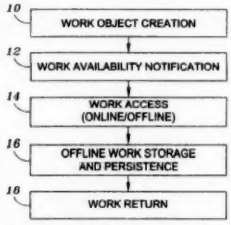
METHOD FOR COMMUNICATING AND CONTROLLING TRANSACTIONS BETWEEN UNSECURED PARTIES

N. Muralidhran, Santa Clara, and John Torkelson, San Jose, both of Calif., assignors to BancTec, Inc., Dallas, Tex.

Filed May 7, 1998, Appl. No. 74,181

Int. Cl. G06F *13/00*

U.S. Cl. 713—201 **2 Claims**



1. A method for communicating transactions on a network of unsecured parties, comprising:

a first party on the network generating a request to a second party on the network to initiate a transaction, the second party maintaining a data base containing a plurality of separate transactions;

the second party in response to the request, automatically generating and communicating on the network to the first party a unique transaction identifier for the first party's transaction; and

the first party tracking processing of the transaction in the second party's data base using the unique transaction identifier to gain access to the second party's data base without gaining access to other transactions in the second party's data base to thereby allow the first party to track processing of the transaction and determine a status of the transaction while allowing the second party to continue to communicate with additional parties.

US 6,341,352 B1

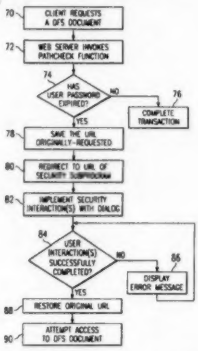
METHOD FOR CHANGING A SECURITY POLICY DURING PROCESSING OF A TRANSACTION REQUEST

Garry L. Child, Austin; Theodore Jack London Shrader, and Davis Kent Soper, both of Cedar Park, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1998, Appl. No. 173,041

Int. Cl. H04L *9/32*

U.S. Cl. 713—201 **29 Claims**



1. A method for changing a security policy for an application, the method comprising the steps of:

intercepting a user credential from a client sent to the application;

determining that a revised security policy for the application exists, wherein the revised security policy represents a security policy that was revised after the user credential was issued;

entering a security subprogram that interacts with a user, the security subprogram being independent of the application; and

upon satisfactory conclusion of the security interaction, invoking the application.

US 6,341,353 B1

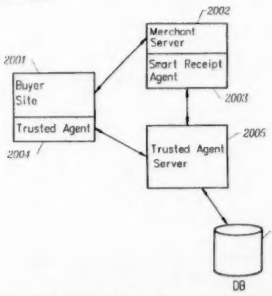
SMART ELECTRONIC RECEIPT SYSTEM

Gary Herman, San Francisco; Theodore Charles Goldstein, Palo Alto, and Ronald G. Martinez, San Francisco, all of Calif., assignors to The Brodia Group, San Francisco, Calif.

Continuation-in-part of application No. 08/834,027, filed on Apr. 11, 1997, Provisional application No. 60/111,988, filed on Dec. 12, 1998. This application Dec. 10, 1999, Appl. No. 467,545.

Int. Cl. G06F *12/14*

U.S. Cl. 713—201 **28 Claims**



27. An apparatus for implementing an electronic trusted intermediary between parties involved in a negotiation in a computer environment, comprising:

a Trusted Agent Server to act as the impartial trusted intermediary between said parties;

a module for recording each step that occurs during the negotiations as a Limited Edition Digital Object (LEDO) in a Smart Receipt;

a module for storing said Smart Receipt on a secure database on said Server;

wherein said Smart Receipt is comprised of a chain of LEDOs; and

wherein a Trusted Agent submits a party's offer, counter-offer, or acceptance LEDO to said Server.

US 6,341,354 B1

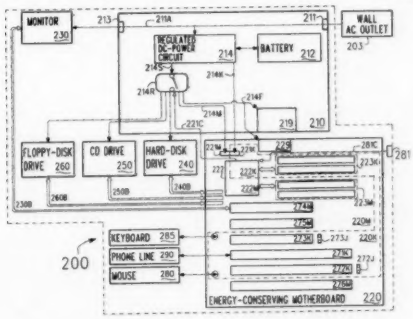
ENERGY-CONSERVING COMPUTER ACCESSIBLE REMOTELY AND INSTANTANEOUSLY BY PROVIDING KEEP-ALIVE POWER TO MEMORY

Howard Hong-Dough Lee, Bloomfield, Mich., assignor to SmartPower Corporation, Bloomfield, Mich.

Filed Apr. 16, 1999, Appl. No. 293,089

Int. Cl. G06F *1/32*

U.S. Cl. 713—324 **36 Claims**



1. An energy-conserving computer system comprising:

(a) keep-alive power-distributing circuitry for continuously distributing keep-alive DC power;

(b) a first group of circuitry in power connection with said keep-alive power-distributing circuitry, said first group of circuitry comprising keep-alive memory means for storing task information needed to be kept alive;

(c) switchable power-distributing circuitry comprising switching means and a plurality of input/output connector means, wherein said switching means is provided for selectively distributing main DC power to said plurality of input/output connector means, and said plurality of input/output connector means each is provided for detachably establishing circuit communication with a circuit card; and

(d) a second group of circuitry in power connection with said switchable power-distributing circuitry, said second group of circuitry comprising main microprocessor circuitry.

US 6,341,355 B1

AUTOMATIC CLOCK SWITCHER

Mark D. Rutherford, Fort Collins, and Arthur G. Rogers, Windsor, both of Colo., assignors to LSI Logic Corporation, Milpitas, Calif.

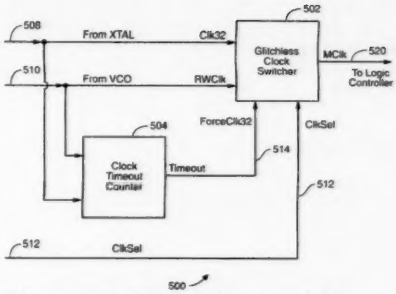
Filed Mar. 16, 1999, Appl. No. 270,586

Int. Cl. G06F *1/06*

U.S. Cl. 713—501 **37 Claims**

1. A method for switching from a first clock output to a second clock output, the method is being implemented in data processing system in which at least one system component is clocked by the output of a clock, the method comprising:

receiving a first clock output from a first clock;



receiving a second clock output from a second clock;

receiving a first signal containing first switching data;

receiving a second signal containing second switching data;

based on the first switching data contained in the first signal and the second switching data contained in the second signal, disconnecting the output of the first clock from the system component;

receiving a third signal containing third switching data;

receiving a fourth signal containing fourth switching data; and

based on the third clock switching data contained in the third signal and the fourth switching data contained in the fourth signal, connecting the output of the second clock to the system component for clocking the system component.

US 6,341,356 B1

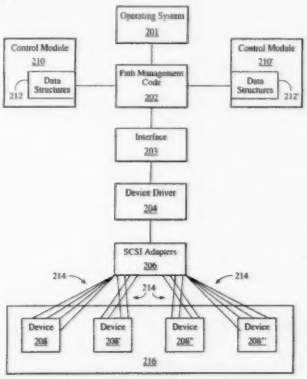
SYSTEM FOR I/O PATH LOAD BALANCING AND FAILURE WHICH CAN BE PORTED TO A PLURALITY OF OPERATING ENVIRONMENTS

Richard Harold Johnson, Cupertino; Limei Shaw, San Jose, and Cam-Thuy Do, Sunnyvale, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1999, Appl. No. 276,618

Int. Cl. G06F *9/46;13/14;11/00;* **H04L** *29/06;1/22*

U.S. Cl. 714—4 **13 Claims**



1. A method for path management of a data processing system which can include a plurality of hosts; the plurality of hosts running multiple operating systems, the method comprising the steps of:

(a) providing a portable path management code;

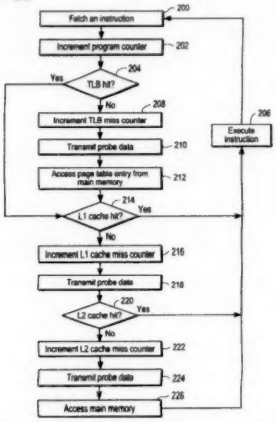
(b) providing a plurality of control modules, each of the control modules having an area which can only be accessed by the portable path management code; and

(c) providing an interface to at least one device driver from the portable management code to allow the portable management code to control access to the plurality of paths to a plurality of storage subsystems by the at least one device driver.

US 6,341,357 B1
APPARATUS AND METHOD FOR PROCESSOR PERFORMANCE MONITORING

Hari K. Ravichandran, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Oct. 8, 1997, Appl. No. 947,368
Int. Cl. G06F *11/14*
U.S. Cl. 714—38 **7 Claims**



1. An apparatus for monitoring an execution behavior of a program, comprising:

a processor for executing a plurality of instructions;

a probe logic unit in communication with the processor that generates probe signals representative of memory access misses occurring in the processor;

a performance monitor circuit element that receives the probe signals and associates a temporal identifier signal with the probe signals; and

a memory for storing the temporal identifier signal and the probe signals, wherein the performance monitor circuit element stores the temporal identifier signal with the probe signals in the memory; and

a second high-speed memory and a program counter, the second high-speed memory generating a second high-speed memory miss signal,

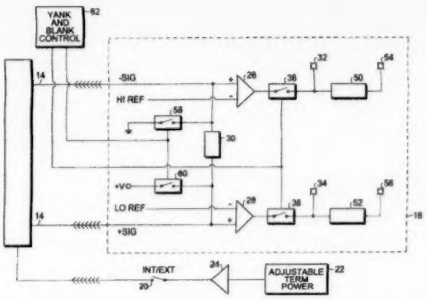
wherein the probe logic unit generates a program counter signal, a second high-speed memory miss signal indicating a miss in the second high-speed memory a second high-speed memory miss count signal representing a number of misses in the second high-speed memory, and a time stamp signal when the second high-speed memory miss signal is active.

US 6,341,358 B1
INTEGRITY TESTER FOR PARALLEL SIGNAL BUS

Charles Bagg, Fitchburg, and William Ham, Andover, both of Mass., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 14, 1998, Appl. No. 152,824
Int. Cl. H02H *3/05*
U.S. Cl. 714—43 **51 Claims**

29. A method of testing the integrity of a parallel data transmission device having a plurality of data transmission paths, wherein the data transmission device transmits electronic signals and the data transmission paths each comprise a conductor, wherein on each of the data transmission paths a first detectable signal may be generated, the first signal, when transmitted on any of said transmission paths, exhibiting a significantly altered signal characteristic when the integrity of a transmission path on which it is transmitted is compromised, the method comprising:



generating a reference signal having characteristics comparable to the first signal;

simultaneously comparing the reference signal to the first signal as present on each of said data transmission paths;

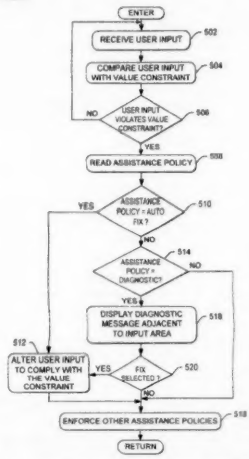
simultaneously identifying from said comparisons the existence of said altered characteristic in any of the signals on said transmission paths; and

providing an output mechanism that gives a simultaneous indication of an error in one or more transmission paths when the comparison element identifies said altered signal characteristic as being present in the first signal as transmitted on those one or more transmission paths.

US 6,341,359 B1
SELF-DIAGNOSING AND SELF CORRECTING DATA ENTRY COMPONENTS

William Holland Aiken, Aptos, and Frederick Thomas Sharp, Menlo Park, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1998, Appl. No. 211,711
Int. Cl. G06F *9/445*
U.S. Cl. 714—100 **51 Claims**



1. A method of accepting input data into a computer, comprising the steps of:

presenting a component to the user, the component including an input area for accepting input data, wherein the component is subject to a constraint for the input data;

accepting user input into the component input area; and

following at least one assistance policy associated with the component when the user input violates the value constraint.

US 6,341,360 B1

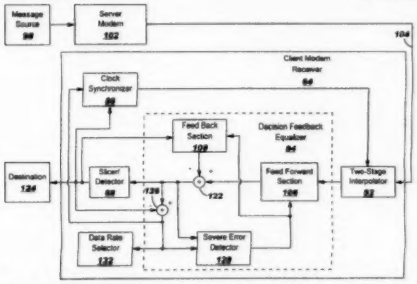
DECISION FEEDBACK EQUALIZERS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR DETECTING SEVERE ERROR EVENTS AND PRESERVING EQUALIZER FILTER CHARACTERISTICS IN RESPONSE THERETO

Youssef Abdelilah, Holly Springs; Gordon Taylor Davis; Jeffrey Haskell Derby, both of Chapel Hill, all of N.C.; Ajay Dholakia, Gattikon; Evangelos Stavros Eleftheriou, Zurich, both of Switzerland; Dongming Hwang, Cary, N.C.; Fredy D. Neeser, Langnau, Switzerland; Malcolm Scott Ware, Raleigh, and Hua Ye, Durham, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 8, 1999, Appl. No. 264,094

Int. Cl. G06F *11/00;* **G01R** *31/28;* **H03H** *7/30;7/40;* **H03K** *5/159*

U.S. Cl. 714—704 **18 Claims**



1. A method for stabilizing a decision feedback equalizer that includes a digital filter characterized by a set of coefficients, comprising the steps of:

processing an output signal sample from the equalizer to detect occurrences of severe errors;

determining if a number of severe error occurrences surpasses a first threshold; and

preventing the coefficients from being updated to new values if the first threshold is surpassed.

2. A method as recited in claim **1**, wherein the determining step comprises the steps of:

incrementing an error counter by a first constant if a severe error has occurred; and

comparing the error counter with the first threshold.

US 6,341,361 B1

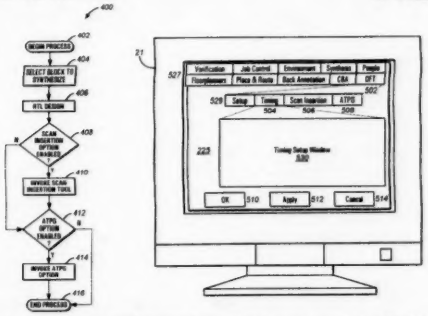
GRAPHICAL USER INTERFACE FOR TESTABILITY OPERATION

Luis A. Basto, Austin, and W. David Dougherty, Roundrock, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 1, 1999, Appl. No. 323,653

Int. Cl. G01R *31/28;* **G06F** *11/00*

U.S. Cl. 714—726 **15 Claims**



1. A computer-implemented graphical user interface (GUI) for testability operation, the GUI comprising:

a design for test (DFT) menu, comprising:

a scan insertion option to invoke a scan insertion tool to check a design for testability; and

a test generator option to invoke a test generation tool to check the design for fault coverage.

US 6,341,362 B1

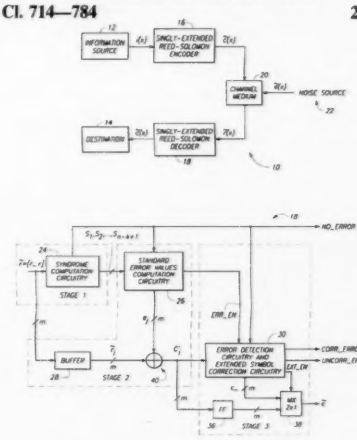
EXTENDED SYMBOL GALOIS FIELD ERROR CORRECTING DEVICE

Habibollah Golnabi, Plano, Tex., assignor to VLSI Technology, Inc., Sunnyvale, Calif.

Filed Apr. 22, 1999, Appl. No. 298,225

Int. Cl. H03M *13/00;* **G06F** *11/00*

U.S. Cl. 714—784 **25 Claims**



1. An extended symbol Galois field error correcting device, comprising:

a singly-extended Reed-Solomon encoder configured to generate an encoded codeword, $\bar{c}(x)$;

a channel medium signal coupled with the singly-extended Reed-Solomon encoder and configured to receive the encoded codeword, $\bar{c}(x)$, and output a received input codeword, $\bar{r}(x)$, the channel medium capable of introducing error, $\bar{e}(x)$, to the encoded codeword, $\bar{c}(x)$; and

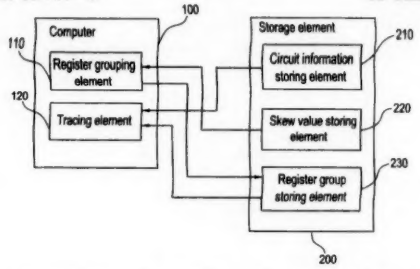
a singly-extended Reed-Solomon decoder coupled with the channel medium and configured to receive the received input codeword, $\bar{r}(x)$, the singly-extended Reed-Solomon decoder having error detection circuitry and extended symbol correction circuitry, the error detection circuitry configured to detect presence of error, $\bar{e}(x)$, within the received input codeword, $\bar{r}(x)$, and the extended symbol correction circuitry configured to correct the received input codeword, $\bar{r}(x)$, by computing syndromes of an intermediate output codeword (c'_j), a corrected extended parity symbol (c_) being provided such that the corrected extended symbol (c_) is multiplexed with the intermediate output codeword (c'_j) to yield a final output codeword, $\bar{c}$=[c_c'].

US 6,341,363 B1

DELAY COMPUTATION APPARATUS, DELAY COMPUTATION METHOD, AND STORAGE MEDIUM FOR DETERMINING A PATH OF A LOGIC CIRCUIT WITH MAXIMUM OR MINIMUM DELAY TIMES

Takumi Hasegawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 29, 1999, Appl. No. 239,540
Claims priority, application Japan, Jan. 30, 1998, 10-019914
Int. Cl. G06F *17/50*
U.S. Cl. 716—6 30 Claims



1. An apparatus for computing delay times of logic paths included in a logic circuit which has a plurality of elements whose output is determined by input of a clock signal and at least one signal which is not said clock signal, said apparatus comprising:

a first element which stores information about said logic circuit;

a second element which groups pairs of two of said elements into groups based on a clock skew value of said pairs of said elements, wherein each group has a specific range of clock skew values; and

a third element which computes a delay time for each of said pairs grouped by said second element by using a predetermined clock skew value which is within said range used in said second element and said information about said logic circuit stored in said first element.

US 6,341,364 B1

COMPUTER ASSISTED METHOD OF PARTITIONING AN ELECTRICAL CIRCUIT

Utz Wever, München; Qinghua Zheng, Taufkirchen, and Norbert Fröhlich, Augsburg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE97/02588, § 371 Date May 17, 1999, § 102(e) Date May 17, 1999, PCT Pub. No. WO98/22896, PCT Pub. Date May 28, 1998
PCT Filed Nov. 6, 1997, Appl. No. 308,304
Claims priority, application Germany, Nov. 18, 1996, 196 47 620
Int. Cl. G06F *17/50*
U.S. Cl. 716—7 11 Claims

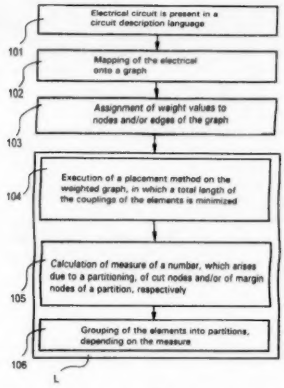
1. Computer supported method for partitioning an electrical circuit, comprising the steps of:

mapping the electrical circuit onto a graph having the same topology as the electrical circuit;

assigning nodes and/or edges of the graph weight values with which a required computing outlay, for the calculation of electrical descriptive parameters for elements of the electrical circuit which are represented by the node and/or by the edge, is described;

placing the elements of the electrical circuit,

while minimizing a total length of couplings between the elements, taking into account the weight values that are assigned to the nodes and/or edges;


Electrical circuit is present in a circuit description language
101
Mapping of the electrical onto a graph
102
Assignment of weight values to nodes and/or edges of the graph
103
Execution of a placement method on the weighted graph, in which a total length of the couplings of the elements is minimized
104
Calculation of measure of a number, which arises due to a partitioning, of cut nodes and/or of margin nodes of a partition, respectively
105
Grouping of the elements into partitions, depending on the measure
106

calculating a measure of a number of cut edges and/or margin nodes of partitions of the electrical circuit arising in the partitioning; and

grouping the elements in partitions depending on the calculated measure.

US 6,341,365 B1

METHOD FOR AUTOMATING THE PLACEMENT OF A REPEATER DEVICE IN AN OPTIMAL LOCATION, CONSIDERING PRE-DEFINED BLOCKAGES, IN HIGH FREQUENCY VERY LARGE SCALE INTEGRATION/ ULTRA LARGE SCALE INTEGRATION (VLSI/ULSI) ELECTRONIC DESIGNS

Robert P. Dwyer, New Paltz, and Peter J. Camporese, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 15, 1999, Appl. No. 396,327
Int. Cl. G06F *17/50*
U.S. Cl. 716—8 14 Claims

1. A method for placing a semiconductor circuit device between a driver and one or more receivers on the floor space of a chip, comprising the steps of:

determining respective distances between said driver and each of said one or more receivers;

determining a shortest of said distances;

determining midpoint along said shortest distance;

determining whether said midpoint is predesignated to the floor space of one or more blocking semiconductor circuit devices;

placing said repeater at said midpoint if said midpoint is not predesignated to said one or more blocking semiconductor circuit devices; and

applying a backoff algorithm to incrementally back away from said midpoint to an optimal location, and placing said repeater at said optimal location, if said midpoint is predesignated to said one or more blocking semiconductor circuit devices.

US 6,341,366 B1

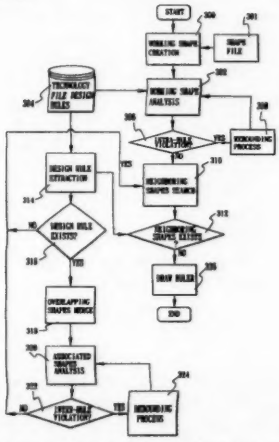
RULE-DRIVEN METHOD AND SYSTEM FOR EDITING PHYSICAL INTEGRATED CIRCUIT LAYOUTS

Jui-Chien Wang, and Yih-Lang Li, both of Hsinchu, Taiwan, assignors to Spring Soft Inc., Hsinchu, Taiwan

Filed Jan. 15, 1999, Appl. No. 232,467

Int. Cl. A61F *2/02*

U.S. Cl. 716—11 15 Claims



1. A rule-driven method for editing a physical integrated circuit layout comprised of a plurality of working shapes, comprising the machine executed steps of:

creating a desired working shape that is shown on a computer monitor;

calculating a width value associated with said desired working shape;

verifying if the width value violates a minimum distance as defined by relevant design rules of an applied fabrication technology; and

automatically adjusting geometry of said desired working shape to comply with the relevant design rules upon verification that the width value violates the minimum distance;

wherein each of the working shapes is multi-edge, and the width value is the distance between a selected edge and an opposite facing edge of said desired working shape;

wherein the step of automatically adjusting the geometry of said desired working shape includes the sub-step of rebounding the selected edge to a rebounding spot that is displaced by the minimum distance from the opposite facing edge; and

further comprising the step of creating a ruler that is disposed between the selected edge and the opposite facing edge and that is shown on the computer monitor.

US 6,341,367 B1

HARDWARE REALIZED STATE MACHINE

Kevin A. Downing, Fort Collins, Colo., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 25, 2000, Appl. No. 624,932

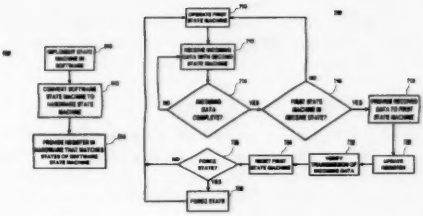
Int. Cl. H03K *17/693*

U.S. Cl. 716—16 14 Claims

6. A method, comprising:

implementing a state machine in a software program;

converting the software program state machine to a hardware realization of the state machine;



providing a register coupled with the hardware realization of the state machine so that at least one aspect of the state machine is capable of being reconfigured without having to redesign hardware components of the hardware realization of the state machine such that the register matches the states in the software program implementation of the state machine.

US 6,341,368 B1

METHOD AND SYSTEMS FOR CREATING MULTI-INSTANCED SOFTWARE WITH A PREPROCESSOR

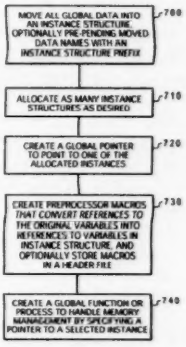
Scott Deans, Raleigh, N.C., assignor to Cirrus Logic, Inc., Austin, Tex.

Provisional application No. 60/056,634, filed on Aug. 22, 1997.

This application Dec. 3, 1997, Appl. No. 984,167.

Int. Cl. G06F *9/45*

U.S. Cl. 717—1 17 Claims


MOVE ALL GLOBAL DATA INTO AN INSTANCE STRUCTURE, OPTIONALLY PRE-PENDING MOVED DATA NAMES WITH AN INSTANCE STRUCTURE PREFIX
700
ALLOCATE AS MANY INSTANCE STRUCTURES AS DESIRED
710
CREATE A GLOBAL POINTER TO POINT TO ONE OF THE ALLOCATED INSTANCES
720
CREATE PREPROCESSOR MACROS THAT CONVERT REFERENCES TO THE ORIGINAL VARIABLES INTO REFERENCES TO VARIABLES IN INSTANCE STRUCTURE, AND OPTIONALLY STORE MACROS IN A HEADER FILE
730
CREATE A GLOBAL FUNCTION OR PROCESS TO HANDLE MEMORY MANAGEMENT BY SPECIFYING A POINTER TO A SELECTED INSTANCE
740

1. A method of creating multi-instantiated code from single instance code designed to run as only a single copy of a program on a data processing system, wherein the single instance code includes global data and references to variables which use at least some of the global data, comprising the steps of:

a. moving all of the global data from said single instance code into an instance structure;

b. allocating a plurality of instances of the instance structure;

c. creating a global pointer to selectively point to one of said plurality of instances;

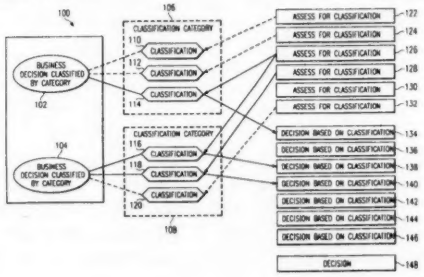
d. converting references to variables in said single instance code to references to variables in an instance structure; and

e. creating a process to control selection of the instance pointed to by said global pointer to specify a particular one of the allocated plurality of instances as being an active instance for a given time period, to allow multiple instances of said single instance code to be separately executed.

US 6,341,369 B1
METHOD AND DATA PROCESSING SYSTEM FOR SPECIFYING AND APPLYING RULES TO CLASSIFICATION-BASED DECISION POINTS IN AN APPLICATION SYSTEM

Louis Ralph Degenaro, White Plains, N.Y.; David Lars Ehnebuske, Georgetown; Barbara Jane Alspach McKee, Austin, both of Tex.; Kevin Paul Rasmus, Bloomington, Ill., and Isabelle Marie Catherine Rouvellou, New York City, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1998, Appl. No. 204,970
Int. Cl. G06F *9/44*
U.S. Cl. 717—1 **38 Claims**



1 A method in a data processing system for specifying a control point in an application, the method comprising:

creating a control point in the application;

associating a classification category with the control point;

associating a plurality of classifier rules used to classify a state of the application with a category within a plurality of categories; and

associating a plurality of decision rules with the control point, wherein the plurality of decision rules are applied based on an assessment of the state of the application according to the category within the plurality of categories.

US 6,341,370 B1
INTEGRATION OF DATA PREFETCHING AND MODULO SCHEDULING USING POSTPASS PREFETCH INSERTION

Partha Pal Tirumalai, Fremont, and Rajagopalan Mahadevan, Foster City, both of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Apr. 24, 1998, Appl. No. 66,269
Int. Cl. G06F *9/45*
U.S. Cl. 717—5 **97 Claims**

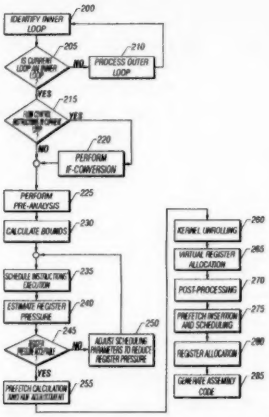
1. A computer-implemented method for compiling source code into output code, said source code having a loop therein, said method comprising:

calculating a prefetch-based unroll factor for the loop;

calculating a kernel unroll factor for the loop;

calculating a prefetch-based kernel unroll factor by adjusting said kernel unroll factor using said prefetch-based unroll factor;

generating the output code using said prefetch-based kernel unroll factor to unroll the loop; and

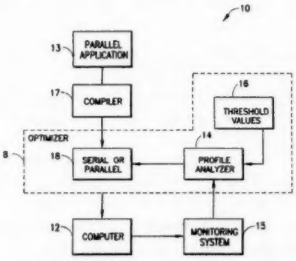


inserting a prefetch instruction into the output code subsequent to the generation of the output code.

US 6,341,371 B1
SYSTEM AND METHOD FOR OPTIMIZING PROGRAM EXECUTION IN A COMPUTER SYSTEM

Sudarsan Tandri, Etobicoke, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1999, Appl. No. 256,036
Int. Cl. G06F *9/45*
U.S. Cl. 717—5 **25 Claims**



1. A method for optimizing a computer program, comprising the steps of:

executing an application program;

profiling a loop of the executing program by periodically sampling the loop at a predetermined frequency and measuring the execution time of the loop;

comparing the execution time of the loop to a threshold value for the loop; and

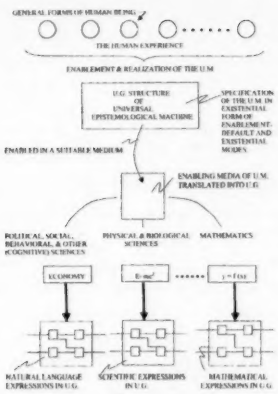
optimizing the subsequent execution of the by changing the loop to one of a serially and a parallel executing loop depending on said comparing step.

US 6,341,372 B1
UNIVERSAL MACHINE TRANSLATOR OF ARBITRARY LANGUAGES

William E. Datig, P.O. Box 528, Centerport, N.Y. 11721

Continuation-in-part of application No. 08/847,230, filed on May 1, 1997. This application Jun. 16, 1997, Appl. No. 876,378.
Int. Cl. G06F *9/45*
U.S. Cl. 717—7 **6 Claims**

1. A method for the universal machine translation of arbitrary languages, comprising the steps of:


GENERAL FORMS OF HUMAN BEING
THE HUMAN EXPERIENCE
ENABLEMENT & REALIZATION OF THE U.M.
U.G. STRUCTURE OF UNIVERSAL EPISTEMOLOGICAL MACHINE
SPECIFICATION OF THE U.M. IN EXISTENTIAL FORM OF ENABLEMENT: DEFAULT AND EXISTENTIAL MODES
ENABLED IN A SUITABLE MEDIUM
ENABLING MEDIA OF U.M. TRANSLATED INTO U.G.
POLITICAL, SOCIAL, BEHAVIORAL, & OTHER (COGNITIVE) SCIENCES
PHYSICAL & BIOLOGICAL SCIENCES
MATHEMATICS
ECONOMY
E=mc²
y=f(x)
NATURAL LANGUAGE EXPRESSIONS IN U.G.
SCIENTIFIC EXPRESSIONS IN U.G.
MATHEMATICAL EXPRESSIONS IN U.G.

identifing high-level grammatical constructions of an arbitrary source language word stream;

constructing a grammatical world model of the syntax of the high-level grammatical construction arbitrary source language word stream based only on epistemic instances of the source language;

decomposing the arbitrary source language into only its epistemic instances and an arbitrary target language into only its epistemic instances, wherein the source language epistemic instances semantically correspond to the target language epistemic instances;

translating the epistemic instances of the source language word stream into semantically equivalent epistemic instances of the target language with substantially no loss in meaning;

constructing a grammatical world model of the syntax of a target language high-level word stream using only the epistemic instances of the target language; and

generating a translated target language word stream;

wherein each of the epistemic instances comprises a pair of objects of transformation in the source language's or the target language's word stream, and a transformer of the pair of objects.

US 6,341,373 B1

SECURE DATA DOWNLOADING, RECOVERY AND UPGRADING

Robert Shaw, Los Altos, Calif., assignor to Liberate Technologies, San Carlos, Calif.

Continuation of application No. 09/080,577, filed on May 18, 1998, which is a continuation-in-part of application No. 08/770,238, filed on Dec. 20, 1996, now Pat. No. 5,991,799, Provisional application No. 60/046,749, filed on May 16, 1997. This application Dec. 1, 2000, Appl. No. 728,700.

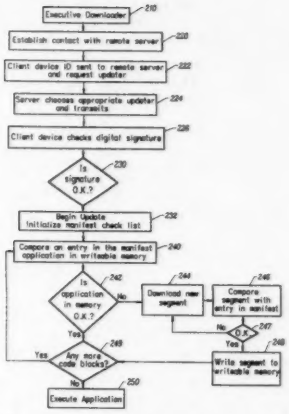
This patent is subject to a terminal disclaimer.

Int. Cl. G06F *9/445;17/30*

U.S. Cl. 717—11 **30 Claims**

1. A method of updating application code on a client device from a remote server, said method comprising:

performing a boot sequence on said client device, said boot sequence including (a) verifying the validity of application software contained in a writeable memory, (b) automatically retrieving without user intervention from the remote server through a communication channel update data for identifying invalid code segments, (c) automatically retrieving without user intervention from the remote server through said communication channel replacement code for replacement of said invalid code segments, and comparing validity status data within said update data for identifying invalid code segments


Executive Downloader 210
Establish contact with remote server 220
Client device ID sent to remote server and request updater 222
Server chooses appropriate updater and transmits 224
Client device checks digital signature 226
Is signature O.K.? 230
Begin Update Initialize manifest check list 232
Compare an entry in the manifest application in writeable memory 240
Is application in memory O.K.? 242
No
Download new segment 244
Compare segment with entry in manifest 246
No
O.K.? 247
Yes
Yes
Any more code blocks? 249
Yes
Write segment to writeable memory 248
No
Execute Application 250

such that only invalid code segments need be replaced whereby a compression of data transmission is effected.

US 6,341,374 B2

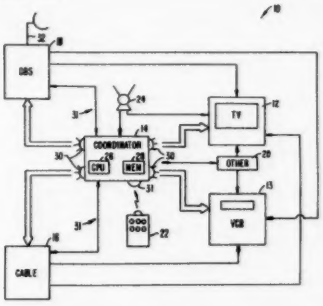
TELEVISION SCHEDULE SYSTEM AND METHOD OF OPERATION FOR MULTIPLE PROGRAM OCCURRENCES

Steven M. Schein, Menlo Park; David P. Warden, Belmont; Molly K. King; Theresa A. Alba, both of Fremont, and Robert E. Russman, Pleasanton, all of Calif., assignors to Starsight Telecast. Inc., Fremont, Calif.

Continuation of application No. 09/344,274, filed on Jun. 30, 1999, now Pat. No. 6,247,176, which is a continuation of application No. 09/120,704, filed on Jul. 22, 1998, now Pat. No. 5,959,688, which is a continuation of application No. 08/665,216, filed on Jun. 14, 1996, now Pat. No. 5,801,787. This application Apr. 24, 2001, Appl. No. 841,137.

Int. Cl. H04N *5/445*

U.S. Cl. 725—43 **10 Claims**



1. A method for providing television program information for a viewer comprising the steps of:

displaying a television schedule guide including a listing of a plurality of television programs telecast at particular times;

receiving viewer selection of a television program listing associated with a particular television program;

storing the viewer selection of the television program listing; and

alerting the viewer when an instance of the particular television program is added to the television schedule guide.

US 6,341,375 B1

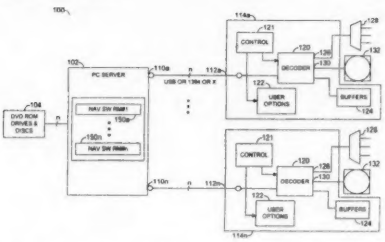
VIDEO ON DEMAND DVD SYSTEM

Daniel Watkins, Saratoga, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 14, 1999, Appl. No. 353,216

Int. Cl. H04N *7/173*

U.S. Cl. 725—100 19 Claims



1. An apparatus comprising:

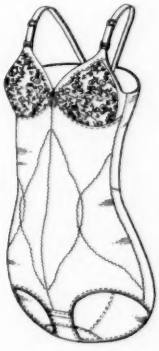
a drive server configured to present a plurality of compressed data streams in response to one or more first control signals;

a control server configured to present said one or more compressed data streams received from said drive server in response to one or more request signals; and

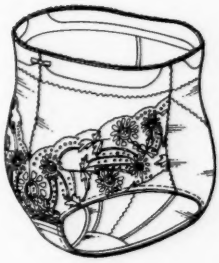
one or more decoder devices, at least one of said one or more decoder devices being disposed in a separate room from said control server and said drive server, each of said one or more decoder devices being configured to (i) decode at least one of said one or more compressed data streams received from said control server and (ii) present at least one signal selected from a decoded video signal and a decoded audio signal in response to decoding said one or more compressed data streams, wherein a first portion of a selected one of said compressed data streams is presented to one of said decoder devices and a second portion of said selected compressed data stream is presented to another of said decoder devices.

US D452,985 S
BODY SUIT
Park Kim, 33-102 Hyosung Villa, 63 Chungdam-dong, Kangnam-ku, Seoul, Rep. of Korea
Continuation-in-part of application No. 29/107,730, filed on Jul. 14, 1999, now abandoned. This application Jun. 13, 2000, Appl. No. 124,867.
Term of patent 14 years
LOC (7) Cl. 02 - *01*
U.S. Cl. D2—704

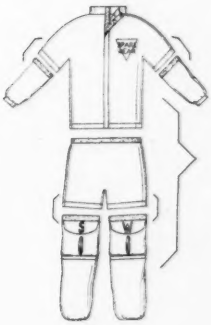
US D452,986 S
BODY SUIT
Park Kim, 33-102 Hyosung Villa, 63 Chungdam-dong, Kangnam-ku, Seoul, Rep. of Korea
Continuation-in-part of application No. 29/107,729, filed on Jul. 14, 1999, now abandoned. This application Jun. 13, 2000, Appl. No. 124,869.
Term of patent 14 years
LOC (7) Cl. 02 - *01*
U.S. Cl. D2—704



US D452,987 S
GIRDLE
Park Kim, 33-102 Hyosung Villa, 63 Chungdam-dong, Kangnam-ku, Seoul, Rep. of Korea
Continuation-in-part of application No. 29/107,821, filed on Jul. 12, 1999, now abandoned. This application Jun. 26, 2000, Appl. No. 125,494.
Term of patent 14 years
LOC (7) Cl. 02 - *01*
U.S. Cl. D2—704



US D452,988 S
SPARE TRAVEL CLOTHING
Ramona Kate Ergezinger, and Wayne Allen Ergezinger, both of Box 1731, Vegreville, Alberta, Canada, T9C 1S8
Filed Jan. 24, 2000, Appl. No. 117,470
Term of patent 14 years
LOC (7) Cl. 02 - *02*
U.S. Cl. D2—743

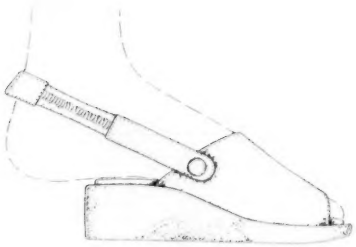


US D452,989 S

HEALTH-DIET SANDAL

Jian Qian Chen, 1691 S. Los Rolbes Ave., San Marina, Calif. 91108

Filed Jul. 10, 2001, Appl. No. 144,857
Term of patent 14 years
LOC (7) Cl. 02 - *04*
U.S. Cl. D2—918

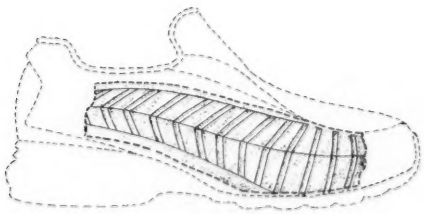


US D452,990 S

PORTION OF A SHOE UPPER

Sean Michael McDowell, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jun. 27, 2001, Appl. No. 144,093
Term of patent 14 years
LOC (7) Cl. 02 - *99*
U.S. Cl. D2—972

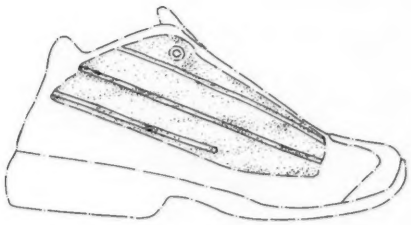


US D452,991 S

PORTION OF A SHOE UPPER

Andrew Estey, West Linn, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jul. 31, 2001, Appl. No. 145,782
Term of patent 14 years
LOC (7) Cl. 02 - *99*
U.S. Cl. D2—972

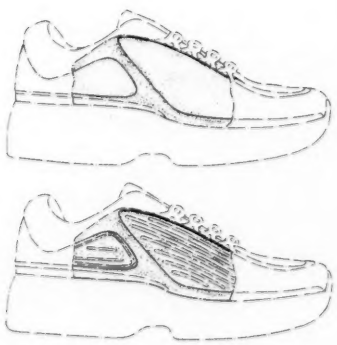


US D452,992 S

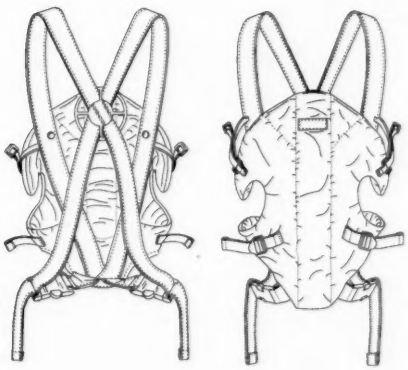
PORTION OF A SHOE UPPER

Steven F. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jul. 31, 2001, Appl. No. 145,783
Term of patent 14 years
LOC (7) Cl. 02 - *99*
U.S. Cl. D2—972

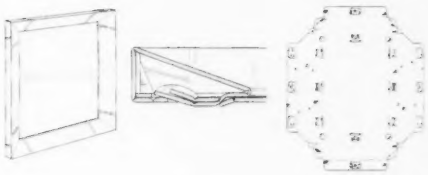


US D452,993 S
INFANT CARRIER
Lisa C. Norman, Solana Beach, Calif., assignor to Infantino LLC, San Diego, Calif.
Filed May 24, 2001, Appl. No. 142,415
Term of patent 14 years
LOC (7) Cl. 03 - *99*
U.S. Cl. D3—214



US D452,994 S
BRUSH HANDLE
Jeffrey Mink, and Maryanne Gulitti, both of FM Brush Co., Inc, 70-02 72nd Pl., Glendale, N.Y. 11385
Filed May 31, 2000, Appl. No. 124,127
Term of patent 14 years
LOC (7) Cl. 04 - *02*
U.S. Cl. D4—138

US D452,995 S
PICTURE FRAME
Michael Peter Barry, PO Box 33-214, Takapuna Auckland 1332, New Zealand
Filed Jul. 17, 2000, Appl. No. 126,580
Term of patent 14 years
LOC (7) Cl. 06 - *07*
U.S. Cl. D6—300



US D452,996 S
UTENSIL HANDLE
Michael D. Prince; Tong Jin Kim, both of Chicago; Richard L. Sassone, Elk Grove Village; John E. Armando, River Grove, and Nicolaus Bruns, III, Wheaton, all of Ill., assignors to World Kitchen, Inc., Elmira, N.Y.
Filed Jan. 12, 2001, Appl. No. 135,596
Term of patent 14 years
LOC (7) Cl. 07 - *02*
U.S. Cl. D7—395

US D452,997 S

CONDIMENT GRINDER

David A. Holcomb; Joshua R. Stewart, and Peter A. Ryding, all of Seattle, Wash., assignors to Chef'n Corporation, Seattle, Wash.

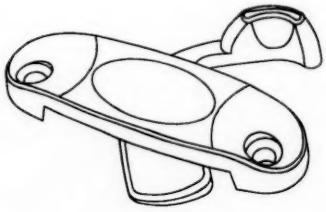
Filed Oct. 13, 2000, Appl. No. 131,187
Term of patent 14 years
LOC (7) Cl. 07 - *06*
U.S. Cl. D7—679

US D452,998 S

LOCK

Daryl F. Speed, Vancouver, Canada, assignor to Vanguard Plastics Inc., Surrey, Canada

Filed Aug. 1, 2000, Appl. No. 127,100
Term of patent 14 years
LOC (7) Cl. 08 - *07*
U.S. Cl. D8—341

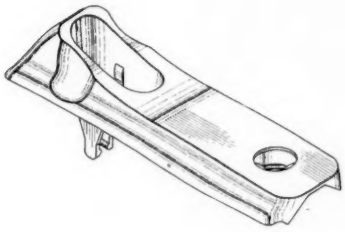


US D452,999 S

OUTER SURFACE OF A COVER FOR A CASEMENT WINDOW OPERATOR

David J. Vande Steeg, Pella; Andrew W. Middleswart, Indianola; Marlo G. Van Klompenburg; Bruce A. Baier, both of Pella, all of Iowa; Frank R. Wilgus, Delaware, Ohio, and Gregory J. Vetter, Owatonna, Minn., assignors to Pella Corporation, Pella, Iowa

Filed Dec. 6, 2000, Appl. No. 133,758
Term of patent 14 years
LOC (7) Cl. 08 - *07*
U.S. Cl. D8—343

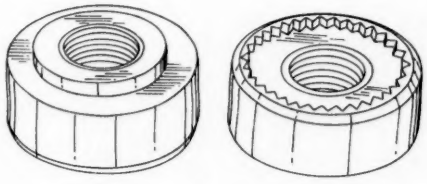


US D453,000 S

CLINCH NUT

Katsumi Shinjo; Tadashi Shinjo, and Hiroshi Shinjo, all of Osaka, Japan, assignors to Yugenkaisha Shinjo Seisakusho, Osaka, Japan

Filed Oct. 31, 2000, Appl. No. 131,926
Claims priority, application Japan, May 11, 2000, 12-012368
Term of patent 14 years
LOC (7) Cl. 08 - *08*
U.S. Cl. D8—397



US D453,001 S

OPAQUE TOP SCALLOPED BOTTOM FLEXIBLE BEVERAGE CONTAINER

Ronald H. Berman, 267 Quincy Ave., Long Beach, Calif. 90803

Filed Apr. 27, 2001, Appl. No. 141,027

This patent is subject to a terminal disclaimer.

Term of patent 14 years

LOC (7) Cl. 09 - *05*

U.S. Cl. D9—305

US D453,002 S

PACKAGING BOX

Serge Mansau, Thiverval, France, assignor to Givenchy Parfums SA, Paris, France

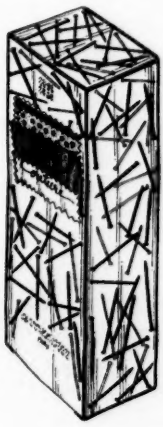
Filed Nov. 9, 2000, Appl. No. 132,384

Claims priority, application France, May 12, 2000, 00 2868

Term of patent 14 years

LOC (7) Cl. 09 - *03*

U.S. Cl. D9—432



US D453,003 S

PLASTIC CONTAINER

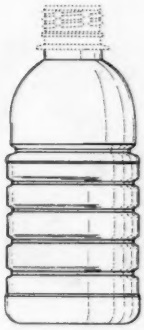
A. B. M. Bazlur Rashid, Neenah, Wis., assignor to Pechiney Emballage Flexible Europe, France

Filed Feb. 16, 2000, Appl. No. 118,821

Term of patent 14 years

LOC (7) Cl. 09 - *01*

U.S. Cl. D9—502



US D453,004 S

CONTAINER

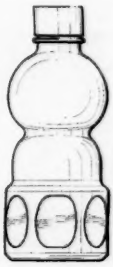
Chisato Hirata, Tokyo, Japan, assignor to Yugen Kaisha Task Force, Tokyo, Japan

Filed Feb. 23, 2000, Appl. No. 119,067

Term of patent 14 years

LOC (7) Cl. 09 - *01*

U.S. Cl. D9—516



US D453,005 S
WRIST-WATCH

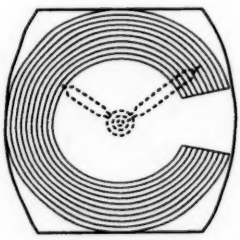
Lorenz Maria Baumer, Monte Carlo, Monaco, assignor to Dinh Van, Paris, France

Filed Oct. 25, 2000, Appl. No. 131,555
Claims priority, application France, Apr. 26, 2000, 00 2560
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—32

US D453,006 S
WATCH FACE

Richard LePeu, Paris, and Jacques Diltoer, Villeneuve-la-Garenne, both of France, assignors to Cartier International B.V., Amsterdam, Netherlands

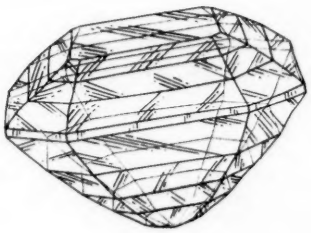
Filed Jun. 23, 2000, Appl. No. 125,552
Claims priority, application Hague Agreement, Dec. 28, 1999, DM/050 553
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—126



US D453,007 S
DIAMOND

Edward Asscher, Amsterdam, Netherlands, assignor to Koninklijke Asscher Diamant, Maatschappij B.V., Amsterdam, Netherlands

Filed Nov. 8, 2000, Appl. No. 132,449
Claims priority, application Hague Agreement, May 26, 2000, DM/052 311
Term of patent 14 years
LOC (7) Cl. 11 - *01*
U.S. Cl. D11—90



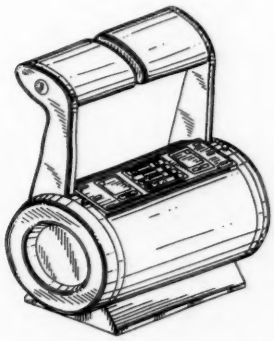
US D453,008 S
U.S. PILOT WINGS

Sandra Gail Mihail, 9032 Firebird Dr., Las Vegas, Nev. 89134

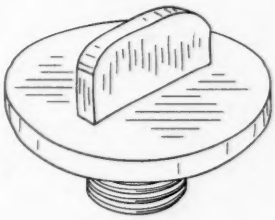
Filed Jul. 31, 2000, Appl. No. 127,101
Term of patent 14 years
LOC (7) Cl. 11 - *03*
U.S. Cl. D11—107

US D453,009 S
TIRE TREAD
Jean-Nicolas Helt, Mont-Saint-Martin, France, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 23, 2001, Appl. No. 139,086
Term of patent 14 years
LOC (7) Cl. 12 - *15*
U.S. Cl. D12—147

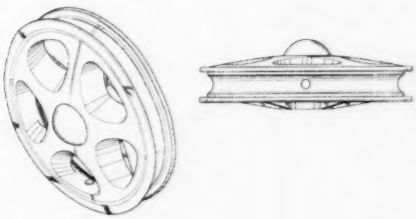
US D453,010 S
CONTROLLER
Karl-Heinz Schweer, Wennigsen, Germany, assignor to Rexroth Mecman GmbH, Hannover, Germany
Filed Dec. 2, 1999, Appl. No. 114,889
Claims priority, application Germany, Jun. 2, 1999, 499 05 327
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—174



US D453,011 S
OIL OR FUEL FILTER CAP
Henry Canady, c/o Marine Electric, Inc., P.O. Box 159, Ravenel, S.C. 29470
Filed Mar. 24, 2000, Appl. No. 120,748
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—197



US D453,012 S
WHEEL FRAME
Ting-Hsing Chen, Tainan Hsien, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan Hsien, Taiwan
Filed Feb. 23, 2000, Appl. No. 118,997
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—209



US D453,013 S

MOTORCYCLE WHEEL FRONT FACE

Roy Curtis Cunningham, Belton, Mo., assignor to Carriage Works, Inc., Grandview, Mo.

Filed Jun. 14, 2001, Appl. No. 143,498

Term of patent 14 years

LOC (7) Cl. 12 - *16*

U.S. Cl. D12—209

US D453,014 S

AIRCRAFT

Norman Thomas Laurence Fraser, 4597 Candleberry Ave., Seal Beach, Calif. 90740-3026

Filed Apr. 10, 2001, Appl. No. 139,973

Term of patent 14 years

LOC (7) Cl. 12 - *07*

U.S. Cl. D12—319

US D453,015 S

HEADPHONE

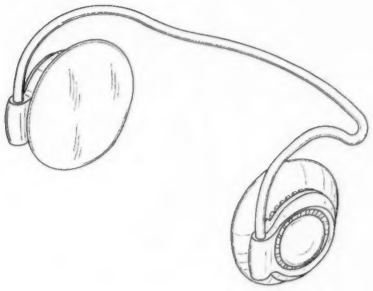
Yasuo Yuyama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 30, 2001, Appl. No. 142,533

Term of patent 14 years

LOC (7) Cl. 14 - *01*

U.S. Cl. D14—205



US D453,016 S

LOUDSPEAKER UNIT

Stuart Michael Nevill, Kent, and Morten Villiers Warren, London, both of United Kingdom, assignors to B & W Loudspeakers Limited, West Sussex, United Kingdom

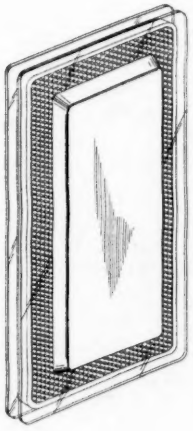
Filed Jan. 11, 2001, Appl. No. 135,324

Claims priority, application United Kingdom, Jul. 20, 2000, 2094371

Term of patent 14 years

LOC (7) Cl. 14 - *01*

U.S. Cl. D14—214

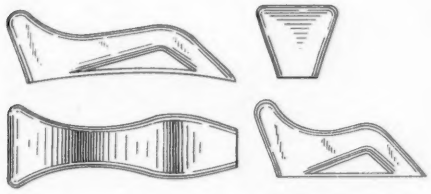


US D453,017 S

TELEPHONE HANDSET SHOULDER REST

Dale C. Gledhill, 790 W. 1760 South, Salt Lake City, Utah 84104

Filed Jan. 11, 2001, Appl. No. 135,498
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—253

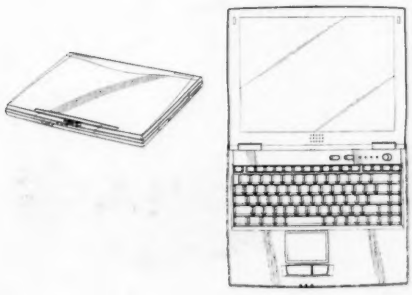


US D453,018 S

PORTABLE COMPUTER

Chih-Peng Ma, and Ming-Hsun Chou, both of Taipei, Taiwan, assignors to Compal Electronics Inc., Taipei, Taiwan

Filed Dec. 28, 2000, Appl. No. 134,668
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—318

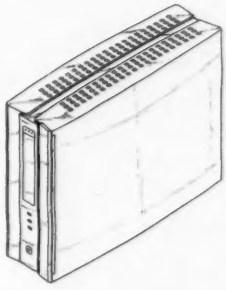


US D453,019 S

COMPUTER

Haruo Oba, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 10, 2001, Appl. No. 135,266
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—348

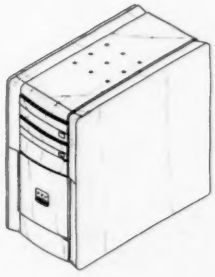


US D453,020 S

COMPUTER

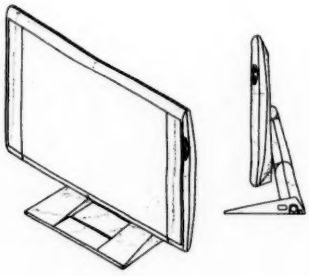
Shoichiro Matsuoka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 10, 2001, Appl. No. 135,267
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—349

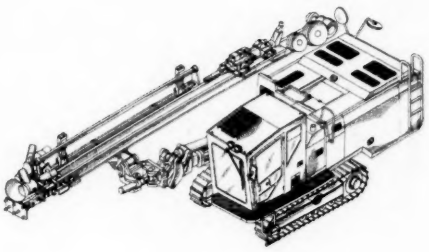


US D453,021 S
MONITOR
Yutaka Hasegawa; Takao Nakayama, both of Tokyo, Japan; Max Yoshimoto, San Francisco, and Jim Wicks, Mill Valley, both of Calif., assignors to Sony Corporation, Tokyo, Japan
Filed Jun. 20, 2000, Appl. No. 125,165
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—371

US D453,022 S
MONITOR
Haruo Oba, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 28, 2001, Appl. No. 137,715
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—374



US D453,023 S
CRAWLER DRILL
Tsutomu Kaneko, Takasaki; Kazuya Goto, Tano-gun; Takahiro Yamamoto, and Yoichi Koroku, both of Takasaki, all of Japan, assignors to Furukawa Co., Ltd., Japan
Filed May 3, 2000, Appl. No. 122,777
Term of patent 14 years
LOC (7) Cl. 15 - *03*
U.S. Cl. D15—21



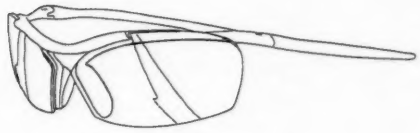
US D453,024 S
SUNGLASSES
Patrick Bonnemere, Lyons, France, assignor to Cébé International S.A., France
Filed Apr. 17, 2001, Appl. No. 140,274
Claims priority, application Hague Agreement, Oct. 17, 2000, DM/054 118
Term of patent 14 years
LOC (7) Cl. 16 - *06*
U.S. Cl. D16—309

US D453,025 S

SPECTACLES

Renata Fusi, Via San Maurilio, 4, 20123 Milano; Silvana Mollica, Via Canova, 9, 20145 Milano, and Paolo Zanotto, Via Aselli, 7, 20133 Milano, all of Italy

Division of application No. 29/132,185, filed on Nov. 6, 2000.
This application Jun. 14, 2001, Appl. No. 143,391.
Claims priority, application Italy, May 5, 2000, MI000274 U
Term of patent 14 years
LOC (7) Cl. 16 - *06*
U.S. Cl. D16—315

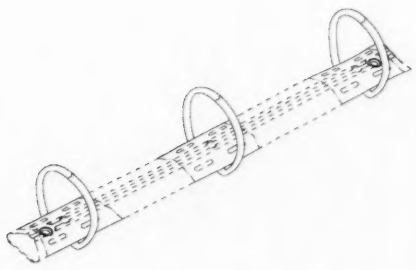


US D453,026 S

RING BINDER

Chun Yuen To, Kauto Shan Shatin N.T., The Hong Kong Special Administrative Region of the People's Republic of China, assignor to World Wide Stationery Manufacturing Company, Ltd., Hong Kong, The Hong Kong Special Administrative Region of the People's Republic of China

Filed Aug. 3, 2001, Appl. No. 146,094
Term of patent 14 years
LOC (7) Cl. 19 - *04*
U.S. Cl. D19—32

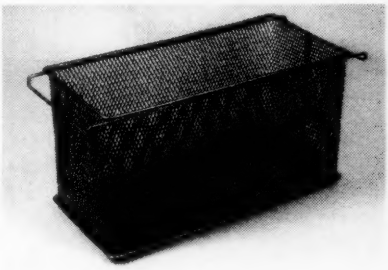


US D453,027 S

MESH FILE DRAWER

Mina Andujar, Oak Park, Ill., assignor to Design Ideas, Ltd., Springfield, Ill.

Filed Feb. 12, 2001, Appl. No. 137,052
Term of patent 14 years
LOC (7) Cl. 19 - *02*
U.S. Cl. D19—90

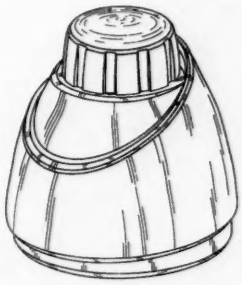


US D453,028 S

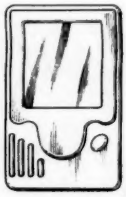
INK BOTTLE

Donald A. DeLuca, Guilford; Michael Kent, Cheshire, and John N. Mitra, Monroe, all of Conn., assignors to BIC Corporation, Milford, Conn.

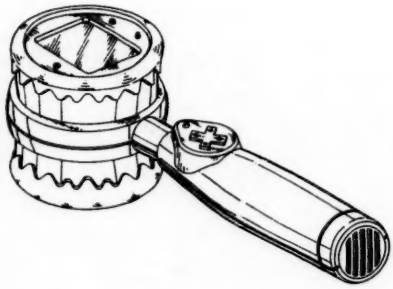
Filed Nov. 14, 2000, Appl. No. 132,740
Term of patent 14 years
LOC (7) Cl. 19 - *06*
U.S. Cl. D19—93



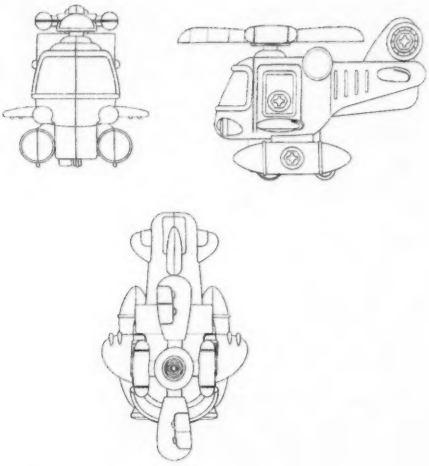
US D453,029 S
COMPUTER GAME
Lee Smith, 676 S. Military Trail, Deerfield Beach, Fla. 33442
Filed Jan. 17, 2001, Appl. No. 135,650
Term of patent 14 years
LOC (7) Cl. 21 - *01*
U.S. Cl. D21—329



US D453,030 S
HAND HELD VIDEO GAME APPARATUS
Christopher Lutchen, Orland Hills, Ill., and Bruce Edward Foster, Ellington, Conn., assignors to Meyer/Glass Design, Ltd., Chicago, Ill.
Division of application No. 09/593,856, filed on Jun. 14, 2000. This application Feb. 7, 2001, Appl. No. 136,755.
Term of patent 14 years
LOC (7) Cl. 21 - *01*
U.S. Cl. D21—329



US D453,031 S
TOY HELICOPTER
Wai Keung Tse, Chaiwan, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Wah Hing Toys Development Co., Ltd., Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China
Filed Dec. 28, 2000, Appl. No. 134,677
Term of patent 14 years
LOC (7) Cl. 21 - *01*
U.S. Cl. D21—442



US D453,032 S
PENGUIN PRESS STUFFED TOY
Robert Heller, 1912 Ironwood Court, Port Moody, British Columbia, Canada, V3H 4C3
Filed Sep. 27, 2000, Appl. No. 130,230
Term of patent 14 years
LOC (7) Cl. 21 - *01*
U.S. Cl. D21—607

US D453,033 S

PENGUIN GOLFER STUFFED TOY

Robert Heller, 1912 Ironwood Court, Port Moody, British Columbia, Canada, V3H 4C3

Filed Jan. 25, 2001, Appl. No. 136,330
Term of patent 14 years
LOC (7) Cl. 21 - *01*
U.S. Cl. D21—607

US D453,034 S

DOLL

Martin E. Turk, 203 Yoakum Pkwy., No. 707, Alexandria, Va. 22304

Filed Aug. 8, 2000, Appl. No. 127,505
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 21 - *01*
U.S. Cl. D21—621

US D453,035 S

EXERCISE DEVICE

Peter Evan Giles, 5 Mainston Road., Remuera, Auckland, New Zealand

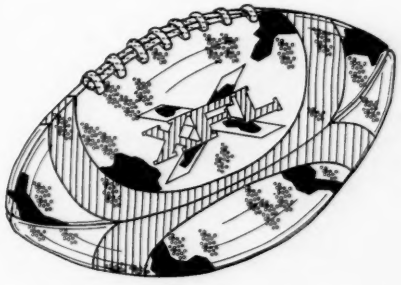
Filed Jul. 26, 1999, Appl. No. 108,235
Term of patent 14 years
LOC (7) Cl. 21 - *02*
U.S. Cl. D21—662

US D453,036 S

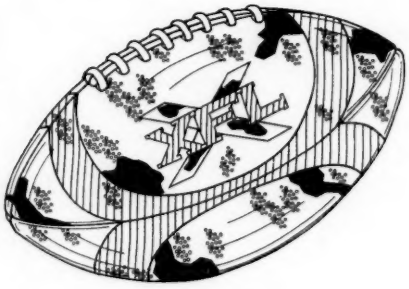
FOOTBALL

Ralph Frisina, 14 Arlington St., Pittsfield, Mass. 01201; Michael Coakley, 58 E. St., and Nathan B. Winstanley, 271 Pittsfield Rd., both of Lenox, Mass. 01240

Filed Jan. 31, 2001, Appl. No. 136,412
Term of patent 14 years
LOC (7) Cl. 21 - *02*
U.S. Cl. D21—712

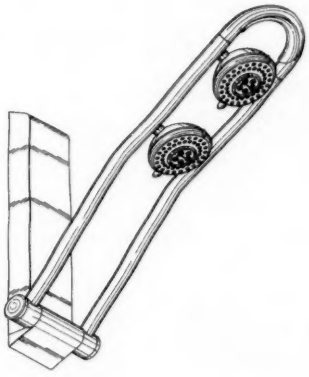


US D453,037 S
FOOTBALL
Ralph Frisina, 14 Arlington St., Pittsfield, Mass. 01201; Michael Coakley, 58 East St., and Nathan B. Winstanley, 271 Pittsfield Rd., both of Lenox, Mass. 01240
Filed Jan. 31, 2001, Appl. No. 136,419
Term of patent 14 years
LOC (7) Cl. 21 - *02*
U.S. Cl. D21—712

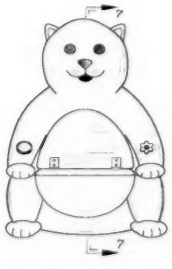


US D453,038 S
POP-UP TARGET
Earl J Scott, P.O. Box 583, Louisburg, N.C. 27549
Filed Jul. 12, 2001, Appl. No. 127,359
Term of patent 14 years
LOC (7) Cl. 22 - *04*
U.S. Cl. D22—113

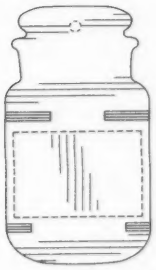
US D453,039 S
SHOWER APPARATUS
Hans Lobermeier, Menden, Germany, assignor to Friedrich Grohe AG & Co. KG, Hemer, Germany
Filed Mar. 28, 2001, Appl. No. 139,323
Claims priority, application Germany, Oct. 13, 2000, 4 00 09 748
Term of patent 14 years
LOC (7) Cl. 23 - *01*
U.S. Cl. D23—228



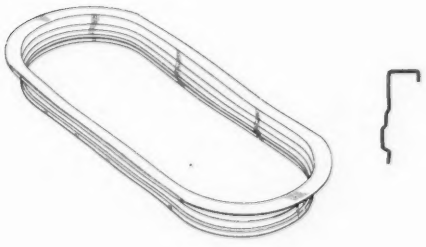
US D453,040 S
DECORATIVE POTTY CHAIR
Glinda L Davis, 4379 Blue Bell St., Memphis, Tenn. 38109
Filed Feb. 9, 2001, Appl. No. 136,915
Term of patent 14 years
LOC (7) Cl. 23 - *02*
U.S. Cl. D23—297



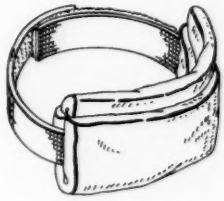
US D453,041 S
AIR FRESHENER
Robert B. Nelson, Shelburne Falls, Mass., assignor to The Yankee Candle Company, Inc., South Deerfield, Mass.
Filed Nov. 14, 2000, Appl. No. 132,619
Term of patent 14 years
LOC (7) Cl. 23 - *04*
U.S. Cl. D23—367



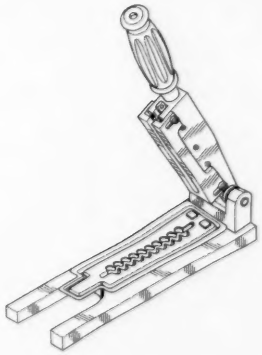
US D453,042 S
COUPLING RING FOR VENTILATION DUCTS
Lars-Åke Mattsson, Båstad; Kenneth Lennartsson, Torekov; Sten Högman, Grevie, and Carl-Gustaf Sondén, Ängelholm, all of Sweden, assignors to Lindab AB, Bastad, Sweden
Filed Jan. 17, 2001, Appl. No. 135,788
Term of patent 14 years
LOC (7) Cl. 23 - *04*
U.S. Cl. D23—393



US D453,043 S
THERMAL DEVICE FOR MAINTAINING THE TEMPERATURE OF BODY EXTREMITIES
Robert D. Hart, P.O. Box 896, Red Lodge, Mont. 59068, and Anita A. Perkins, 136 Shirley Way, Anaconda, Mont. 59711-9417
Filed Jun. 6, 2000, Appl. No. 124,448
Term of patent 14 years
LOC (7) Cl. 24 - *04*
U.S. Cl. D24—206



US D453,044 S
TABLET SPLITTING APPARATUS
Thomas L. Buckley, 2399 Innisbrook La., Laguna Niguel, Calif. 92677, and John I. Muri, 46 Edmonton Pl., Aliso Viejo, Calif. 92656
Filed May 30, 2001, Appl. No. 142,556
Term of patent 14 years
LOC (7) Cl. 07 - *04*
U.S. Cl. D24—220

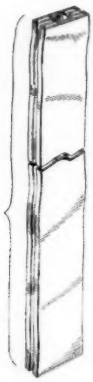


US D453,045 S

POST FOR A STORAGE SHED

Harout Ohanesian, U.S. Polymers, Inc., 6915 E. Slauson Ave., Commerce, Calif. 90040

Filed Jan. 10, 2001, Appl. No. 135,442
Term of patent 14 years
LOC (7) Cl. 25 - *01*
U.S. Cl. D25—124



US D453,046 S

CORRUGATED SIDE PANEL FOR A STORAGE SHED

Harout Ohanesian, 6915 E. Slauson Ave., Commerce, Calif. 90040

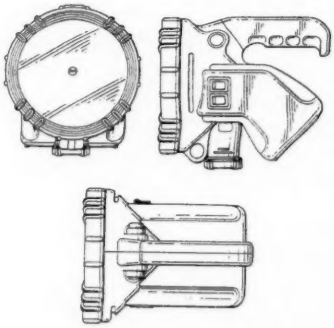
Filed Jan. 10, 2001, Appl. No. 135,389
Term of patent 14 years
LOC (7) Cl. 25 - *01*
U.S. Cl. D25—138

US D453,047 S

DOUBLE VISION-SUPER RECHARGEABLE HALOGEN LIGHT

Se Kit Yuen, 6/F., Yau Lee Centre, 45 Hoi Yuen Road, Kwun Tong, Kowloon, Hong Kong, China

Filed Jun. 19, 2001, Appl. No. 143,669
Claims priority, application United Kingdom, Mar. 22, 2001, 2100556
Term of patent 14 years
LOC (7) Cl. 26 - *02*
U.S. Cl. D26—44



US D453,048 S

LIGHT FIXTURE

Sergio J. Orozco, West New York, N.J., assignor to Quoizel, Inc., Goose Creek, S.C.

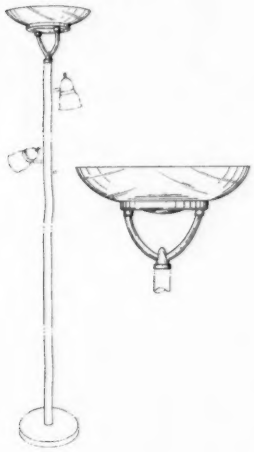
Filed Dec. 11, 2000, Appl. No. 133,921
Term of patent 14 years
LOC (7) Cl. 26 - *05*
U.S. Cl. D26—87

US D453,049 S

TORCHIERE TREE LAMP

Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.

Filed Jan. 10, 2001, Appl. No. 135,829
Term of patent 14 years
LOC (7) Cl. 26 - *03*
U.S. Cl. D26—106

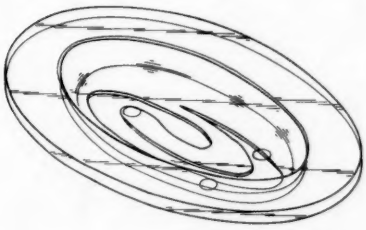


US D453,050 S

ASHTRAY

Kevin Hsu, Taichung, Taiwan, assignor to Dong Guan Bright Yin Huey Lighting Co., Ltd., Guang Dong, China

Filed Jul. 24, 2001, Appl. No. 145,399
Term of patent 14 years
LOC (7) Cl. 27 - *03*
U.S. Cl. D27—102

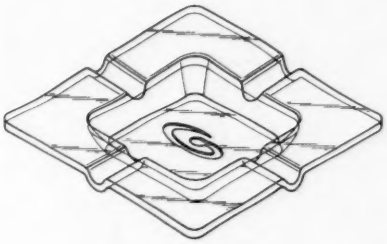


US D453,051 S

ASHTRAY

Kevin Hsu, Taichung, Taiwan, assignor to Dong Guan Bright Yin Huey Lighting Co., Ltd., Guang Dong, China

Filed Jul. 24, 2001, Appl. No. 145,424
Term of patent 14 years
LOC (7) Cl. 27 - *03*
U.S. Cl. D27—134

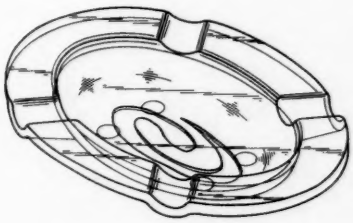


US D453,052 S

ASHTRAY

Kevin Hsu, Taichung, Taiwan, assignor to Dong Guan Bright Yin Huey Lighting Co., Ltd., Guang Dong, China

Filed Jul. 24, 2001, Appl. No. 145,400
Term of patent 14 years
LOC (7) Cl. 27 - *03*
U.S. Cl. D27—135



US D453,053 S

HEADBAND

Mia Minnelli, 1770 Broadway #101, San Francisco, Calif. 94109

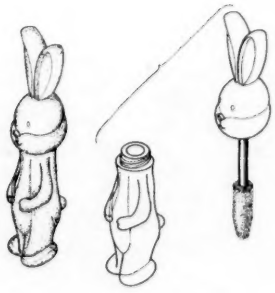
Filed Jan. 30, 2001, Appl. No. 136,366
Term of patent 14 years
LOC (7) Cl. 28 - *03*
U.S. Cl. D28—41

US D453,054 S

COSMETIC CONTAINER

Yu-Ching Shih, Tainan Hsien, Taiwan, assignor to Hawthorn Enterprise Co., Ltd., Tainan Hsien, Taiwan

Filed May 8, 2001, Appl. No. 141,442
Term of patent 14 years
LOC (7) Cl. 28 - *03*
U.S. Cl. D28—76

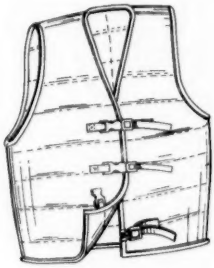


US D453,055 S

COOLING VEST

April Ode, P.O. Box 1693, Lake Havasu City, Ariz. 86405-1693

Filed Jun. 27, 2000, Appl. No. 125,352
Term of patent 14 years
LOC (7) Cl. 02 - *02*
U.S. Cl. D29—101.4

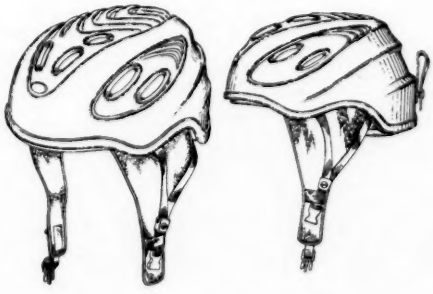


US D453,056 S

SUB-FREEZING WEATHER HELMET

Louis Garneau, St-Augustin-de-Desmaures, Canada, assignor to Louis Garneau Sports Inc., St-Augustin-de-Desmaures, Canada

Filed May 10, 2001, Appl. No. 141,597
Term of patent 14 years
LOC (7) Cl. 29 - *02*
U.S. Cl. D29—106



US D453,057 S

PALLET

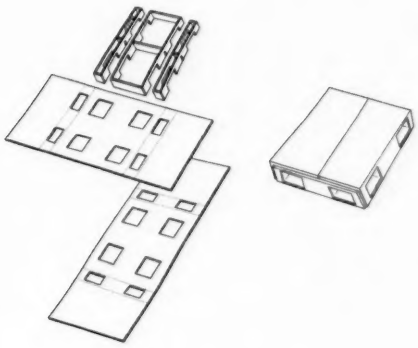
James D. Sewell, 5005 Yarrow Ct., Fair Oaks, Calif. 95628

Filed Mar. 3, 2000, Appl. No. 119,669

Term of patent 14 years

LOC (7) Cl. 09 - *08*

U.S. Cl. D34—38



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TO WHOM

PATENTS WERE ISSUED ON THE 22nd DAY OF JANUARY, 2002

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Wong, Alfred Y., 6,341,217, Cl. 455-90.000.

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Abe, Hideo: *See*—
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Aceto, Steven C.: *See*—
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Krishnan, Sriram; Holley, Gregory L.; Gardner, Edward A.; and Maslak, Samuel H., 6,340,348, Cl. 600-447.000.

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Adler, Annette M.; Fishkin, Kenneth P.; Harrison, Beverly L.; Howard, Matthew E.; and Want, Roy, to Xerox Corporation. Dynamically relocatable tileable displays. 6,340,957, Cl. 345-1.300.

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Bell, Scott A., 6,340,603, Cl. 438-9.000.
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Lopatin, Sergey D.; and Iacoponi, John A., 6,340,633, Cl. 438-625.000.
Phan, Khoi A.; Rangarajan, Bharath; and Singh, Bhanwar, 6,339,955, Cl. 73-105.000.
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Advanced Packaging Corp.: *See*—
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Advanced Precision Technology, Inc.: *See*—
Bahuguna, Ramendra D.; and Corboline, Thomas M., 6,341,028, Cl. 359-211.000.

Advanced Technologies S.r.l.: *See*—
Cappa, Sergio; and Recupero, Antonio, 6,340,107, Cl. 228-4.100.

Advanced Technology Materials, Inc.: *See*—
Baum, Thomas H.; and Xu, Chongying, 6,340,769, Cl. 556-136.000.
Hendrix, Bryan C.; Baum, Thomas H.; Christos, Debra Desrochers; and Roeder, Jeffrey F., 6,340,386, Cl. 106-287.180.

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Aiken, William Holland; and Sharp, Frederick Thomas, to International Business Machines Corporation. Self-diagnosing and self correcting data entry components. 6,341,359, Cl. 714-100.000.

Ainoya, Masayuki: *See*—
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Airtrax Corporation: *See*—
Harris, Donald Barnett, 6,340,065, Cl. 180-7.200.

Aisin Seiki Kabushiki Kaisha: *See*—
Fukumoto, Ryoichi; Yamada, Katsuhisa; Ohhashi, Masao; Suzuki, Shintaro; and Suzuki, Seiichi, 6,340,199, Cl. 296-155.000.

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Ajinomoto Co., Inc.: *See*—
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Akaba, Toshihisa; Kurihara, Kazumichi; Sakai, Yasushi; Fujita, Hakaru; Ishiguro, Youichi; Iizuka, Isao; and Izumitani, Yukihiro, to Hoya Corporation. Spectacles accommodating interchangeable/replaceable lens. 6,340,226, Cl. 351-106.000.

Akamatsu, Tetsuya; and Tashiro, Chiaki, to Teijin Limited. Non-crimping polyester monofilament and process for producing same. 6,340,525, Cl. 428-364.000.

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Akita, Hideo: *See*—
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Akiva, Sharon, to Tapuz Medical Technology Ltd. Wearable apron for use in egg and other medical tests. 6,341,229, Cl. 600-388.000.

Aksit, Mahmut Faruk; Chupp, Raymond Edward; and Dinc, Osman Saim, to General Electric Company. Rotary machine having a seal assembly. 6,340,286, Cl. 415-173.300.

Akutsu, Eiichi; Ohtsu, Shigemi; and Pu, Lyong Sun, to Fuji Xerox Co., Ltd. Process for recording image using photoelectrodeposition method and process for producing color filter using the same. 6,340,544, Cl. 430-7.000.

Alaze, Norbert: *See*—
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Alba, Theresa A.: *See*—
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Nilsson, Göran; and Åberg, Bo-Christer, 6,340,413, Cl. 162-361.000.

Alberson, Dean C.; Bullard, D. Lance, Jr.; and Carney, John F., III. Impact attenuating barrier wall. 6,340,268, Cl. 404-6.000.

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Meyer, Frank; Vamvakaris, Christos; Beck, Karin Heidrun; Wagenblast, Gerhard; and Albert, Bernhard, 6,340,745, Cl. 534-702.000.

Albrecht, Markus; and Muller, Wolfgang, to Grass GmbH. Mounting plate for cabinet hinges. 6,339,864, Cl. 16-258.000.

Alcan International Limited: *See*—
Paradis, Ronald; and Puxley, Donald L., 6,340,033, Cl. 137-563.000.

Alcatel: *See*—
Blanc, Patrick, 6,341,225, Cl. 455-522.000.
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Maurel, Gilles; and Cerutti-Maori, Guy Henri Abel, 6,341,014, Cl. 356-152.100.
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Villemazet, Jean-François; Moroni, Pascal; and Cogo, Bernard, 6,340,917, Cl. 330-149.000.

Alcatel USA Sourcing, L.P.: *See*—
Bradley, Ed; Peel, Melvin G., Jr.; Hayek, Hadi M.; and Linares, Ignacio, 6,341,068, Cl. 361-736.000.
Bradley, Eddie R., 6,341,064, Cl. 361-695.000.

Alcoa Fujikura Limited: *See*—
Hayes, Earl J.; Hall, Thomas A., III; and Wang, Bo M., 6,340,249, Cl. 385-86.000.

Alexander, Doris W.: *See*—
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Allard, Joseph M.: *See*—
Barsky, Michael F.; Tanner, Thomas M.; Slafer, Loren I.; Williams, Paul D.; Semeniuk, George B.; and Allard, Joseph M., 6,340,138, Cl. 244-165.000.

Allender, Jeffrey Owen; and Griepentrog, Dal Frank, to Thomson Licensing SA. Emission control with scanning beam velocity modulation. 6,340,995, Cl. 348-626.000.

Allenzon, Bernd: *See*—
Hauser, Manfred; Alaze, Norbert; Merklein, Dieter; Schuller, Wolfgang; Bayrhof, Julius; Kremsreiter, Walter; Evertz, Joachim; Zielke, Joerg; Zitzelsberger, Ralf; Weh, Andreas; Allenzon, Bernd; and Hellebrandt, Michael, 6,340,295, Cl. 417-470.000.

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Allison, Ronny Lamar: *See*—
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Allison, William C.: *See*—
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Allman, Derryl D. J.; and Bystedt, Brian, to LSI Logic Corporation. Capacitor with multiple-component dielectric and method of fabricating same. 6,341,056, Cl. 361-312.000.

Allsburg, Michael Van: *See*—
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Allure Home Creation Co., Inc.: *See*—
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Almog, Yael; and Toledo, Eran, to T.A.O. Medical Technologies Ltd. Method and system for system identification of physiological systems. 6,340,346, Cl. 600-300.000.

Alnemri, Emad S.; and Fernandez-Alnemri, Teresa, to THomas Jefferson University. Caspase-14, an apoptotic protease, nucleic acids encoding and methods of use. 6,340,740, Cl. 530-350.000.

Alps Electric Co., Ltd.: *See*—
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Alstom (Switzerland) Ltd: *See*—
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Altekrüger, Burkhard; Aufreiter, Joachim; Brüss, Dieter; and Kalkowski, Klaus, to Leybold Systems GmbH. Device and method for the determination of diameters of crystals. 6,341,173, Cl. 382-141.000.

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Altizer, Lance R.: *See*—
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Aluminal Oberflachentechnik GmbH: *See*—
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Serrander, Hans; and Bäckström, Göran, 6,341,188, Cl. 385-114.000.

Bäckström, Reijo; Heinonen, Tuula; and Hauta-Aho, Tuula, to Orion Corporation. Reference compound for use in the analysis of levosimendan batches. 6,340,764, Cl. 549-321.000.

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Reinhardt, Paul A., 6,339,886, Cl. 33-544.200.

Baker, Ivor Philip, to American Cyanamid Co. Herbicidal emulsifiable concentrate compositions of dinitroaniline and oxyacetamide herbicides. 6,340,655, Cl. 504-139.000.

Baksh, Mohamed Safdar Allie; and Ackley, Mark William. Pressure swing adsorption process for the production of hydrogen. 6,340,382, Cl. 95-96.000.

Bakula, John J., to Derrick Manufacturing Corporation. Method of fabricating undulating screen for vibratory screening machine. 6,340,089, Cl. 210-388.000.

Balduin, Michael; Havenith, Hubert; and Labrot, Michael, to Saint-Gobain Glass France. Apparatus for laminating laminated glazing assemblies. 6,340,045, Cl. 156-499.000.

Baldwin, Daniel Kelly: *See—*
Hoyer, James Cottrell; Gronostaj, Richard Walter; and Baldwin, Daniel Kelly, 6,339,924, Cl. 60-39.020.

Ball, Edward D.; and Zhong, Rui-Kun, to University of Pittsburgh. Monoclonal antibody and antigens specific therefor and methods of using same. 6,340,569, Cl. 435-7.200.

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Kocsis, Jody A.; Blystone, Sheri L.; Bardasz, Ewa A.; and DeTar, Marvin B., 6,340,659, Cl. 508-518.000.

Barefoot, Joe B.: *See—*
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Barnett, Timothy: *See—*
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Barrett, Graham David. Intraocular irrigation/aspiration device. 6,340,355, Cl. 604-27.000.

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Eisele, Raymund; Burkart, Axel; Barrett, Paul; Ryan, Andrew; Holy, Peter; and Tantony, Shaun, 6,340,117, Cl. 235-492.000.

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Barton, Brian E., to Rohr, Inc. Translating independently mounted air inlet system for aircraft turbofan jet engine. 6,340,135, Cl. 244-53.00B.

Bascom, James P.; and Buck, John E., to Black & Decker, Inc. Lockout mechanism for power tool. 6,340,802, Cl. 200-43.170.

Basel, Peter L., to LSI Logic Corporation. Automatic correction of power spectral balance in audio source material. 6,341,166, Cl. 381-103.000.

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Glück, Guiscard; Hahn, Klaus; Kaempfer, Knut; Naegele, Dieter; and Braun, Frank, 6,340,713, Cl. 521-60.000.
Meyer, Frank; Vamvakaris, Christos; Beck, Karin Heidrun; Wagenblast, Gerhard; and Albert, Bernhard, 6,340,745, Cl. 534-702.000.

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Basto, Luis A.; and Dougherty, W. David, to Advanced Micro Devices, Inc. Graphical user interface for testability operation. 6,341,361, Cl. 714-726.000.

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Merlin, Sylviane; Battail, Nicole; Flandrois, Jean-Pierre; and Carret, Gérard, 6,340,571, Cl. 435-7.330.

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Bauer, Paul F.: *See—*
Griesemer, Daniel A.; and Bauer, Paul F., 6,339,889, Cl. 40-603.000.

Bauer, Richard George: *See—*
Sandstrom, Paul Harry; Geiser, Joseph Frank; Chu, Judy; Zanzig, David John; and Bauer, Richard George, 6,340,727, Cl. 525-191.000.

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Baum, Thomas H.: *See—*
Hendrix, Bryan C.; Baum, Thomas H.; Christos, Debra Desrochers; and Roeder, Jeffrey F., 6,340,386, Cl. 106-287.180.

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Bayrhof, Julius: *See—*
Hauser, Manfred; Alaze, Norbert; Merklein, Dieter; Schuller, Wolfgang; Bayrhof, Julius; Kremsreiter, Walter; Evertz, Joachim; Zielke, Joerg; Zitzelsberger, Ralf; Weh, Andreas; Allenzon, Bernd; and Hellebrandt, Michael, 6,340,295, Cl. 417-470.000.

Bazin, Hervé; and Mathis, Gérard, to CIS BIO International. Fluorescent conjugates of nucleosides or nucleotides, process for their preparation and their uses. 6,340,747, Cl. 536-23.100.

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Driscoll, Edward C., Jr.; Wallerstein, Edward P.; Lomax, Willard C.; Parris, James E.; Furlan, John Louis Warpakowski; Bacho, Edward V.; and Carbo, Jorge E., Jr., 6,341,044, Cl. 359-725.000.

Beane, Glenn L.: *See—*
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Beard, Colin C.: *See—*
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Beasley, Ellen M.: *See—*
Gan, Weiniu; Ye, Jane; Di Francesco, Valentina; and Beasley, Ellen M., 6,340,584, Cl. 435-194.000.
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Beaton, Brian Finlay; Smith, Colin Donald; Blouin, Francois; Comeau, Guillaume; and Craddock, Arthur Julian Patterson, to Nortel Networks Limited. Contextual gesture interface. 6,340,979, Cl. 345-764.000.

Beck, Hans Christian: *See—*
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Becker, Volker; Laermer, Franz; and Schilp, Andrea, to Robert Bosch GmbH. Method for applying a protecting lacquer on a wafer. 6,340,644, Cl. 438-782.000.

Beckwith, Leslie A.: *See—*
McGaffey, John F.; Russell, Wayne L.; Van Cruz, Randy; and Beckwith, Leslie A., 6,340,936, Cl. 340-944.000.

Becvar, James E.; and Becvar, Laura E., to Board of Regents, The University of Texas System. Kit for the isolation, identification and quantitation of toxicants. 6,340,572, Cl. 435-8.000.

Becvar, Laura E.: *See—*
Becvar, James E.; and Becvar, Laura E., 6,340,572, Cl. 435-8.000.

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Hung, Stephen Lan-Sun; Lovett, Jeffery Alan; Beebe, Kenneth Winston; Cutrone, Martin Bernard; and Correa, Sanjay Marc, 6,339,925, Cl. 60-39.060.

Beeck, Alexander; El-Nashar, Ibrahim; Von Arx, Beat; and Weigand, Bernhard, to Alstom (Switzerland) Ltd. Turbine blade with actively cooled shroud-band element. 6,340,284, Cl. 415-115.000.

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Schwarz, Gebhard; Schwarz, Hans-Dieter; and Wührl, Martin, 6,340,054, Cl. 165-167.000.

Beierman, Dennis M.; and Hubbard, John K., to Premark RWP Holdings, Inc. Method and apparatus for the manufacture of beveled edge molding. 6,340,044, Cl. 156-443.000.

Beigler, Myron A.: *See—*
Bessette, Steven M.; and Beigler, Myron A., 6,340,710, Cl. 514-717.000.

Beiss, Max; and Dietl, Joseph, to Océ Printing Systems GmbH. Apparatus for holding an input unit. 6,340,212, Cl. 312-223.300.

Bejcek, William E.: *See—*
Sharpe, Scott A.; Lundberg, Steven J.; and Bejcek, William E., 6,341,282, Cl. 707-3.000.

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Bell, Valerie A.: *See—*
Kuznicki, Steven M.; Jacubinas, Richard M.; Curran, Jacqueline S.; and Bell, Valerie A., 6,340,433, Cl. 210-651.000.

Bellani, Pietro; and Frigerio, Marco, to Clariant LSM Italia S.p.A. Process for the preparation of (S)-N-tert-butyl-1,2,3,4-tetrahydroisoquinoline-3-carboxyamide. 6,340,760, Cl. 546-89.000.

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MacNicol, Roger Dermot; Kirk, Steven A.; Bello, Randall George; Rao, Jun; and Yang, Katherine Tsouya, 6,341,281, Cl. 707-3.000.

Bemer, Keith: *See—*
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Benayoun, Alain; Le Pennec, Jean-Francois; Michel, Patrick; and Toubol, Gilles, to Cisco Technology, Inc. ATM node having local error correcting procedures. 6,341,132, Cl. 370-397.000.

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Bender, Craig Samuel; and Shedletsky, John James, to IBM Corporation. System for selecting a computer solution from a pre-defined set. 6,341,276, Cl. 706-50.000.

Benedikt, Walter; Rieger, Franz; and Norgauer, Rainer, to Robert Bosch GmbH. Fuel injection valve with integrated spark plug. 6,340,015, Cl. 123-297.000.

Bengsch, Eberhard; Polster, Jürgen; and Kettrup, Antonius, to GSF Foschungszentrum für Umwelt und Gesundheit GmbH. Process for determining the number of components in peaks, bands, and signals of chromatograms, electrograms, and spectrograms. 6,339,950, Cl. 73-23.360.

Bengtsson, Tord; and Leijon, Mats, to ABB Research, Ltd. Method and device for locating partial discharges in an electric high-voltage apparatus. 6,340,890, Cl. 324-536.000.

Benites, Graciela; and Carbo, Miguel. Multi-part and multi-function cover for selective portions of a vehicle. 6,340,198, Cl. 296-136.000.

Bennett, Janet Sue: *See—*
Salvo, Joseph James; Mackenzie, Patricia Denise; Bennett, Janet Sue; Relyea, Heather Ann; and Morelli, Thomas Anthony, II, 6,341,271, Cl. 705-28.000.

Benson, Terrance G., to Textron Inc. Method for constant speed control for electric greens mower. 6,339,916, Cl. 56-10.20R.

Bentley, Barry J.: *See—*
Bentley, Keith A.; Wilson, Samuel W.; Bentley, Barry J.; Bentley, Raymond B.; and Gooding, John B., 6,341,291, Cl. 707-203.000.

Bentley, Keith A.; Wilson, Samuel W.; Bentley, Barry J.; Bentley, Raymond B.; and Gooding, John B., to Bentley Systems, Inc. System for collaborative engineering using component and file-oriented tools. 6,341,291, Cl. 707-203.000.

Bentley, Raymond B.: *See—*
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Bentley Systems, Inc.: *See—*
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Berger, Daniel George; Brouillette, Guy Paul; Danovitch, David Hirsch; Gruber, Peter Alfred; Humphrey, Bruce Lee; Liehr, Michael; Motsiff, William Thomas; and Sambucetti, Carlos Juan, to International Business Machines Corporation. Method for making interconnect for low temperature chip attachment. 6,340,630, Cl. 438-613.000.

Berger, Luzius: *See—*
Fischer, Klaus; Linz, Hans; and Berger, Luzius, 6,340,523, Cl. 428-364.000.

Bergkvist, Håkan, to Baby Björn AB. Toilet seat. 6,339,851, Cl. 4-239.000.

Bermon, Stuart; and Feigin, Gerald E., to International Business Machines Corporation. Method of allocating work in capacity planning. 6,341,240, Cl. 700-97.000.

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Rosenschein, Bob; Schneiderman, Jeff; Brief, Daniel; Bamberger, Naama; Reich, Gil; Bernstein, Uri; Rosen, Tamar; and Szmulewicz, Asher, 6,341,306, Cl. 709-217.000.

Bertacchini, Lucien; Chicherio, Michel; Fieschi, Jacques; and Le Pennec, Jean-Francois, to International Business Machines Corporation. Clock control device for a non-disruptive backup clock switching. 6,341,149, Cl. 375-356.000.

Bertetti, Paolo, to SKF Industrie S.p.A. Device for measuring the relative revolving speed between the races of a rolling contact bearing. 6,339,964, Cl. 73-862.334.

Bertin, John, to Millennium Pharmaceuticals, Inc. Nucleic acid molecules related to card-4L and CARD-4S. 6,340,576, Cl. 435-69.100.

Bertini, Giovanni; Brandani, Paolo; and Vivoli, Daniele, to Matec S.p.A. Device and method for adjusting hosiery tension in circular textile machines. 6,339,943, Cl. 66-149.00R.

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Bertrand, Jacques; Dick, Barry; Wang, Shu Tsai; Ou, Weiwen; Okada, Lynne A.; and Chu, Yen C., to Advanced Micro Devices, Inc. Salsa clean process. 6,340,395, Cl. 134-2.000.

Beslu, Pierre: *See—*
Noe, Maxy; Beslu, Pierre; Brachet, Jean-Christophe; Parmentier, Philippe; and Porta, Jacques, 6,340,536, Cl. 428-660.000.

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Klukowski, Horst; and Vermeiden, Peter, 6,340,492, Cl. 426-557.000.
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Bethea, Warren C. Threadless sprinkler head assembly. 6,340,059, Cl. 169-37.000.

Beverly, Ian, to Spencer Wright Industries, Inc. Needle for a tufting machine. 6,339,995, Cl. 112-80.160.

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Bezuhliy, Petro Avsentiyovych: *See—*
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BHP Minerals International, Inc.: *See—*
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Bibler, John D.: *See—*
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Bickle, Wolfgang; and Schubert, Werner, to KS Gleitlager GmbH. Wrapped slide bearing bushing. 6,340,534, Cl. 428-626.000.

Bider, Kurt: *See—*
Willert, Hans-Georg; and Bider, Kurt, 6,340,370, Cl. 623-22.380.

Biegelsen, David K.: *See—*
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Big Born Shoji Co., Ltd.: *See—*
Uchida, Shizumaru, 6,339,846, Cl. 2-247.000.

Bigg, Dennis: *See—*
Chabrier de Lassauniere, Pierre Etienne; Auvin, Serge; Bigg, Dennis; and Auguet, Michel, 6,340,700, Cl. 514-438.000.

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Bimeda Research and Development LTD: *See—*
McNally, Vincent; Morgan, James Patrick, deceased, 6,340,469, Cl. 424-438.000.

Binah, Ofer: *See—*
Hoffman, Brian F.; and Binah, Ofer, 6,340,667, Cl. 514-2.000.

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Bio-Chem Pharma Inc.: *See—*
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Bio Dar Ltd.: *See—*
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Biotronik Mess-und Therapiegeracte GmbH & Co. Ingenieurbuero Berlin: *See—*
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Hastings, David; Schaldach, Max; Rolison, Gary; and Weyant, Robert R., 6,341,233, Cl. 607-9.000.

Bishop, William: *See—*
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Biswas, Sanjoy: *See—*
Ingraham, Karen Anne; So, Chi Yong; Van Horn, Stephanie; Chalker, Alison Francis; Holmes, David John; Biswas, Sanjoy; Brown, James Raymond; Burnham, Martin Karl Russel; Warren, Patrick Vernon; Warren, Richard Lloyd; and Zalacain, Magdalena, 6,340,564, Cl. 435-6.000.

Bitwinski, Joan: *See—*
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Bjorkman, Claes H.; Yu, Min Melissa; Shan, Hongquing; Cheung, David W.; Yau, Wai-Fan; Liu, Kuowei; Chapra, Nasreen Gazala; Yin, Gerald; Moghadam, Farhad K.; Huang, Judy H.; Yost, Dennis; Tang, Betty; and Kim, Yunsang, to Applied Materials, Inc. Integrated low K dielectrics and etch stops. 6,340,435, Cl. 216-72.000.

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Bascom, James P.; and Buck, John E., 6,340,802, Cl. 200-43.170.
Thomas, Roger, 6,339,918, Cl. 56-17.200.

Black, James C. Portable cylinder carrier arrangement. 6,340,105, Cl. 224-404.000.

Bläcker, Bernhard, to Nokia Mobile Phones Ltd. Device for reactivating an electric battery. 6,340,879, Cl. 320-153.000.

Blackwell, Michael K.: *See*—
Lys, Ihor; Mueller, George G.; Morgan, Frederick Marshall; and Blackwell, Michael K., 6,340,868, Cl. 315-185.00S.

Blanc, Patrick, to Alcatel. Method for improving performances of a mobile radiocommunication system using power control. 6,341,225, Cl. 455-522.000.

Blatt, Yoav; Kimmelman, Eugene; Cohen, David; and Rotman, Avner, to Bio Dar Ltd. Microencapsulated and controlled-release herbal formulations. 6,340,478, Cl. 424-489.000.

Blättler, Walter A.: *See*—
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Blex, Waldemar, to Mannesmann VDO AG. Telescopic steering column with a deformation body. 6,339,970, Cl. 74-492.000.

Blodgett, James R., to SOMA Networks, Inc. Feed forward amplifier. 6,340,915, Cl. 330-52.000.

Bloksma B.V.: *See*—
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Bloksma, Walter, to Bloksma B.V. Heat exchanger with baffle plates. 6,340,051, Cl. 165-159.000.

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Schoubye, Peter; Nielsen, Poul Erik Højlund; and Blom, Niels Jørgen, 6,340,003, Cl. 123-3.000.

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Blouin, Francois: *See*—
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Blum, Robert L.: *See*—
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Blümel, Siegfried: *See*—
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Blumenau, Steven M.: *See*—
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Blystone, Sheri L.: *See*—
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Board of Regents, The University of Texas System: *See*—
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Bobrow, Daniel G.: *See*—
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Hunt, Sybille Marie; Gray, Peter Philip; and Sleigh, Merilyn Joy, 6,340,574, Cl. 435-69.100.

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Villiere, Franck; and Marcellin, Alain, 6,340,187, Cl. 293-155.000.

Compal Electronics, Inc.: *See—*
Chuang, Kuei-Chu, 6,341,060, Cl. 361-685.000.

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Bagg, Charles; and Ham, William, 6,341,358, Cl. 714-43.000.
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Thompson, Mark J.; and Zimmer, Vincent J., 6,341,342, Cl. 711-166.000.

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Huinink, Heinrich; Köbe, Andreas; Fries, Volkmar; and Kleinhoff, Klaus, 6,339,956, Cl. 73-146.000.

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Foo, Chek-Peng; Munch, Carl A.; Cash, Steven M.; DeZorzi, Timothy; Khairallah, Farid; Cooper, Stephen R. W.; Yeh, Huahn-Fern; and Sumner, Paul Leo, 6,341,252, Cl. 701-45.000.

Cooper Technologies Company: *See—*
Rinderer, Eric R., 6,340,141, Cl. 248-49.000.

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Bahuguna, Ramendra D.; and Corboline, Thomas M., 6,341,028, Cl. 359-211.000.

Corde, Gilles: *See—*
Boie, Christian; Kemper, Hans; Kather, Lutz; and Corde, Gilles, 6,340,008, Cl. 123-90.110.

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Battiti, Roberto; and Corghi, Remo, 6,341,013, Cl. 356-139.090.

Corghi S.p.A.: *See—*
Battiti, Roberto; and Corghi, Remo, 6,341,013, Cl. 356-139.090.

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McAlpine, Warren Welborn; Mast, Stephen Owen; Smith, David Henry; and Varga, Joseph, 6,340,126, Cl. 242-160.200.

Corning incorporated: *See—*
Yadlowsky, Michael J., 6,341,033, Cl. 359-337.200.

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Masai, Eiji; Fukuda, Masao; Katayama, Yoshihiro; Nishikawa, Seiji; and Hotta, Yasushi, 6,340,579, Cl. 435-125.000.
Shigehara, Kiyotaka; Katayama, Yoshihiro; Nishikawa, Seiji; and Hotta, Yasushi, 6,340,739, Cl. 528-310.000.

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Anderson, Frank Elbert, III; Brown, Jonathan Miles; Coughlin, Philip Edward; Homans, Steven William; Weller, Charles Tobias; Zimmerman-Wilson, Carrie Ann; and Oliver, Eddie James, Jr., 6,340,578, Cl. 435-71.100.

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Hoang, Peter Phung Minh; Jeremic, Dusan; Kearns, Jason Roy; Coulter, Iain McLaren; and Donaldson, Robert D., 6,340,771, Cl. 556-171.000.

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Rodgers, James L.; Coulthard, John J.; Fowler, Billy C.; Jaecks, Howard K.; Lastinger, Roc A.; Picard, Paul A.; and Rehman, Mohammad A., 6,340,932, Cl. 340-572.700.

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Beaton, Brian Finlay; Smith, Colin Donald; Blouin, Francois; Comeau, Guillaume; and Craddock, Arthur Julian Patterson, 6,340,979, Cl. 345-764.000.

Craig, Clark. Hingeless, parallel storing, sectional aperture covering. 6,339,905, Cl. 52-174.000.

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Joyce, Michael J., Jr.; Crawford, Charles L.; Wolf, Daniel J.; Pesolar, David J.; and Duff, Winslow K., 6,340,211, Cl. 303-191.000.

Crawford, Wheeler Conrad: *See—*
Su, Wei-Yang; Sjoberg, Stephen Lee; and Crawford, Wheeler Conrad, 6,340,559, Cl. 430-331.000.

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Penth, Bernd; Hoerpel, Gerhard; and Hying, Christian, 6,340,379, Cl. 95-45.000.

Creo S.R.L.: *See—*
Gelbart, Daniel, 6,340,817, Cl. 250-341.600.

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Coupland, Keith; and Packer, Claire Elizabeth, 6,340,485, Cl. 424-776.000.

Crompton, Anne: *See—*
Bollag, Gideon; Crompton, Anne; North, Anne; Roscoe, William; and Sharma, Sanju, 6,340,575, Cl. 435-69.100.

Crossroads Systems, Inc.: *See—*
Arroyo, Keith M.; and Wilson, Stephen K., 6,341,315, Cl. 709-230.000.

Crouzet Automatismes: *See—*
Meyer, Olivier, 6,340,881, Cl. 323-282.000.

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Mercer, Merl; Marquardt, Kevin L.; and Crum, Jesse D., 6,340,512, Cl. 428-42.200.

Csipkes, Andrei: *See—*
Mahmood, Waqar; Bao, Jun; and Csipkes, Andrei, 6,341,242, Cl. 700-117.000.

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Horton, Stuart Alexander Leslie; Vijgen, Renier Olga Ernst; Cundill, Robin Thomas; and Sjöström, Hans, 6,340,245, Cl. 384-492.000.

CuraGen Corporation: *See—*
Deem, Michael W.; Rothberg, Jonathan Marc; and Went, Gregory T., 6,341,256, Cl. 702-19.000.

Curran, Jacqueline S.: *See—*
Kuznicki, Steven M.; Jacubinas, Richard M.; Curran, Jacqueline S.; and Bell, Valerie A., 6,340,433, Cl. 210-651.000.

Curran, Thomas F., Jr.; Krywanczyk, Timothy C.; Lube, Michael S.; Moon, Matthew D.; Nadeau, Rock; Reynolds, Clark D.; Schaffer, Dean A.; Sharrow, Joel M.; Smith, Paul H., Jr.; Thomas, David C.; White, Eric J.; and Yao, Kenneth H., to International Business Machines Corporation. Method for reworking copper metallurgy in semiconductor devices. 6,340,601, Cl. 438-4.000.

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Granderson, Daniel Dean; and Curry, Christopher Dorman, 6,340,177, Cl. 280-833.000.

Cuti, Phil. Tennis butler. 6,340,188, Cl. 294-19.200.

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Cvancara, Dustin M.: *See*—
Morris, John C.; and Cvancara, Dustin M., 6,341,048, Cl. 360-77.080.

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Conn, Thomas E.; Ford, Russell; Soni, Pravin L.; Tierney, Michael J.; and Vijayakumar, Prema, 6,341,232, Cl. 604-20.000.

Daberkow, Kevin L.: *See*—
Caulk, Robert L., Jr.; Magoshi, Hidetaka; and Daberkow, Kevin L., 6,341,324, Cl. 710-260.000.

Dade Behring Marburg GmbH: *See*—
Singh, Sharat; and Ullman, Edwin F., 6,340,599, Cl. 436-534.000.

Dagberg, Lars John Ola: *See*—
Andersson, Staffan; and Dagberg, Lars John Ola, 6,341,126, Cl. 370-351.000.

Dai, Hsin Kuo: *See*—
Tsai, Szu-Nan; Shen, Hsiang-Hui; Dai, Hsin Kuo; and Cheng, Ku Te, 6,340,952, Cl. 343-741.000.

Dai Nippon Printing Co., Ltd.: *See*—
Oka, Motohiro; Tsuchiya, Mitsuru; Nakamura, Norinaga; Takematus, Kiyotaka; Ota, Yurie; Suzuki, Hiroko; Yamashita, Natsuko; and Katagiri, Hiroomi, 6,340,404, Cl. 156-230.000.
Ueda, Kenji; Hotta, Tsuyoshi; Taniguchi, Yukio; Sekiguchi, Atsushi; and Iriyama, Hideyuki, 6,340,540, Cl. 430-1.000.

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Handa, Akio; Maki, Yuji; Suzuki, Shoji; Amaki, Kiyoshi; and Sato, Junichi, 6,340,210, Cl. 301-64.400.

Daik, Rusli: *See*—
Feast, William; Daik, Rusli; Friend, Richard Henry; and Cacialli, Franco, 6,340,732, Cl. 526-291.000.

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Yamashita, Michio; Abe, Hideo; Daikuzono, Yoshiharu; Emi, Shingo; and Tomizawa, Nobuo, 6,339,946, Cl. 72-173.000.

DaimlerChrysler Aerospace AG: *See*—
Rust, Stefan, 6,340,922, Cl. 333-208.000.

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Frey, Jürgen; Huber, Ulrike-Christiane; and Schnur, Jürgen, 6,340,068, Cl. 181-207.000.
Hirth, Andreas; and Tschaeschke, Ulrich, 6,340,171, Cl. 280-730.200.
Jaenker, Peter, 6,340,858, Cl. 310-328.000.

Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See*—
Iijima, Yoshihiko, 6,340,654, Cl. 504-114.000.

Dainippon Ink and Chemicals, Inc.: *See*—
Kobori, Takeo; Goto, Tomoko; Kondo, Hitoshi; Tsuboi, Hiroyuki; Iiyama, Mika; Asada, Toru; and Goto, Takashi, 6,340,697, Cl. 514-364.000.

Daiwa Seiko, Inc.: *See*—
Akiba, Masaru, 6,339,896, Cl. 43-18.100.

Dakhil, Dani Y., to Chameleon Systems, Inc. DMA data streaming, 6,341,318, Cl. 710-23.000.

Dalch, Linda N.: *See*—
Shende, Anil M.; Dalch, Linda N.; and Warner, Mark R., 6,341,212, Cl. 434-350.000.

D' Alessio, Keith R.; Rivera, Andres; Voiers, Anthony S.; and Barefoot, Joe B., to Closure Medical Corporation. Applicator with protective barrier. 6,340,097, Cl. 222-12.900.

Damani, Om P.; Garg, Vijay K.; and Wang, Yi-Min, to AT&T. Optimistic distributed simulation based on transitive dependency tracking. 6,341,262, Cl. 703-16.000.

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Dame, Paul; McClung, Duane; and Newhouse, Thomas J., to Herman Miller, Inc. System of wall panels. 6,339,907, Cl. 52-239.000.

Dana Corporation: *See*—
Lannan, Stephen Mark, 6,340,072, Cl. 184-5.100.

Danielson, Orland H.: *See*—
Archibald, G. Kent; Curran, Timothy G.; Danielson, Orland H.; Poliac, Marius O.; and Thede, Roger C., 6,340,349, Cl. 600-494.000.

Danionics A/S: *See*—
Nissen, Ole Stig; Beck, Hans Christian; and Schou, Michael, 6,341,057, Cl. 361-502.000.

Danno, Minoru: *See*—
Ikeda, Tetsuya; and Danno, Minoru, 6,340,863, Cl. 315-111.210.

Danovitch, David Hirsch: *See*—
Berger, Daniel George; Brouillette, Guy Paul; Danovitch, David Hirsch; Gruber, Peter Alfred; Humphrey, Bruce Lee; Liehr, Michael; Motsiff, William Thomas; and Sambucetti, Carlos Juan, 6,340,630, Cl. 438-613.000.

Dantas, Sergio Augusto Ferreira, to FMC do Brasil Industria E. Comercio S.A. Connection device. 6,340,057, Cl. 166-337.000.

Dao, Kevin P. Marker assembly having hinged cap. 6,340,260, Cl. 401-202.000.

Daoud, Bassel H., to Avaya Technology Corp. Bridge clip for a connector. 6,340,306, Cl. 439-219.000.

Darnell, Daniel Henry. Device for heating the teeth and uses therefor. 6,340,301, Cl. 433-216.000.

Das, Duco A. D.: *See*—
Janse, Magdalena D.; Das, Duco A. D.; and Tang, Hok K., 6,340,971, Cl. 345-327.000.

Dassel, Mark W.; and Vassiliou, Eustathios, to RPC Inc. Methods of treating the oxidation mixture of hydrocarbons to respective dibasic acids. 6,340,420, Cl. 204-529.000.

Data I/O Corporation: *See*—
Bolotin, Lev M.; Hubler, Robert Bruce; Powell, Bryan D.; and Whan-Tong, Janine, 6,340,266, Cl. 403-373.000.

Datig, William E. Universal machine translator of arbitrary languages. 6,341,372, Cl. 717-7.000.

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Davenport, George F.: *See*—
Runge, Karl H.; and Davenport, George F., 6,340,272, Cl. 405-203.000.

Davis, Gordon Taylor: *See*—
Abdelilah, Youssef; Davis, Gordon Taylor; Derby, Jeffrey Haskell; Dholakia, Ajay; Eleftheriou, Evangelos Stavros; Hwang, Dongming; Neeser, Fredy D.; Ware, Malcolm Scott; and Ye, Hua, 6,341,360, Cl. 714-704.000.

Davis, Jamie M.: *See*—
Levin, Jeremy I.; Venkatesan, Aranapakam M.; Cole, Derek C.; Chen, James M.; Davis, Jamie M.; and Grosu, George T., 6,340,691, Cl. 514-307.000.

Davis, Kenneth M.: *See*—
Chen, Shyng-Tsong; Chung, Alex Siu Keung; Davis, Kenneth M.; Hsu, Oscar Kai Chi; and Rodbell, Kenneth P., 6,340,325, Cl. 451-56.000.

Davis, Lawrence P.; and Hyde, Tristam T., to Honeywell International Inc. Moment control unit for spacecraft attitude control. 6,340,137, Cl. 244-165.000.

Davis, Michael B.; and Hayes, Garry, to TRW Vehicle Safety Systems Inc. Actuatable knee bolster. 6,340,170, Cl. 280-730.100.

Davis, Paul K.: *See*—
Miller, Robert E.; Marquis, James A.; and Davis, Paul K., 6,339,945, Cl. 72-49.000.

Davis, Rhonda L.: *See*—
Johnson, Mitchell D.; Klein, Michael A.; Parks, Matthew David; Karl, Mark Thomas; Johnson, Patrick; Spahr, Tim; Sajna, Jeff; Andrews, Craig; Higgins, Kenneth Terry; Lowery, Robert A.; Ruby, Keith D.; Mitchell, Alton; and Davis, Rhonda L., 6,340,186, Cl. 293-120.000.

Davis, Richard J.: *See*—
House, Larry J.; and Davis, Richard J., 6,340,082, Cl. 194-317.000.

Davis, Richey M.: *See*—
Elster, Jennifer L.; Davis, Richey M.; and Jones, Mark E., 6,341,185, Cl. 385-12.000.

Dawson, Michael John; Mahmoudian, Mahmoud; and Wallis, Christopher John, to SmithKline Beecham Corporation. Process for preparing enantiomerically enriched N-derivatized lactams. 6,340,587, Cl. 435-280.000.

Dawson, Rodger: *See*—
Cutler, Horace G.; Cutler, Stephen J.; Wright, David; and Dawson, Rodger, 6,340,468, Cl. 424-405.000.

Dayde, Laurent: *See*—
Pasquereau, Michel; Papagni, Jean-François; Levesque, Richard; and Dayde, Laurent, 6,339,965, Cl. 73-863.330.

Daystream Info INC: *See*—
Vladimir, Knyazhitsky, 6,340,874, Cl. 318-471.000.

Dayton, Kenn: *See*—
Carlson, Derek; Dayton, Kenn; Vance, Russ; and Vent, George, 6,340,271, Cl. 405-184.400.

Deacon, David A. G., to Sparkolor Corporation. Lenticular structure for integrated waveguides. 6,341,189, Cl. 385-130.000.

Deane, Jeffrey P.: *See*—
Deane, Robert A.; and Deane, Jeffrey P., 6,340,243, Cl. 374-24.000.

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Deangelis, Gary John: *See*—
Eshleman, Edgar Samuel; and Deangelis, Gary John, 6,340,019, Cl. 123-469.000.

Deans, Scott, to Cirrus Logic, Inc. Method and systems for creating multi-instanced software with a preprocessor. 6,341,368, Cl. 717-1.000.

DeBoer, Scott J., to Micron Technology, Inc. Structural integrity enhancement of dielectric films. 6,340,613, Cl. 438-240.000.

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DeCaluwe, Craig L.: *See*—
Corso, Martin, III; De Trana, Nicholas D.; DeCaluwe, Craig L.; and Demmert, Robert G., 6,341,158, Cl. 379-6.000.

deCarmo, Linden A., to Oak Technology, Inc. Method and system for caching a selected viewing angle in a DVD environment. 6,341,330, Cl. 711-113.000.

Decell, Inc.: *See*—
Lapidot, Dror, 6,341,255, Cl. 701-209.000.

Decroupet, Daniel: *See*—
Ebisawa, Junichi; Aomine, Nobutaka; Takeda, Satoshi; Noda, Kazuyoshi; and Decroupet, Daniel, 6,340,529, Cl. 428-432.000.

Dedic, Ian Juso, to Fujitsu Limited. Switch driver circuitry having first and second output nodes with a current-voltage converter connected therebetween providing current paths of first and second directions therebetween and switching circuitry connected therewith. 6,340,939, Cl. 341-136.000.

Deem, Michael W.; Rothberg, Jonathan Marc; and Went, Gregory T., to CuraGen Corporation. Consensus configurational bias Monte Carlo method and system for pharmacophore structure determination. 6,341,256, Cl. 702-19.000.

Defond Manufacturing Limited: *See—*
Chu, Raymond Wai Hang, 6,340,926, Cl. 337-407.000.

Degenaro, Louis Ralph; Ehnebuske, David Lars; McKee, Barbara Jane Alspach; Rasmus, Kevin Paul; and Rouvellou, Isabelle Marie Catherine, to International Business Machines Corporation. Method and data processing system for specifying and applying rules to classification-based decision points in an application system. 6,341,369, Cl. 717-1.000.

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Dekalb Genetics Corporation: *See—*
Johnson, Steven K., 6,340,786, Cl. 800-320.100.

Dekker, Willem: *See—*
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de Lanauze, Pierre. Method and apparatus for scanning and storing a low resolution optical representation of a finger's image. 6,341,171, Cl. 382-124.000.

Delattre, Laurent: *See—*
Azzopardi, Marie-Jose; Delattre, Laurent; and Codazzi, Nathalie, 6,340,502, Cl. 427-387.000.

Deleo, Malcolm A.; Blum, Robert L.; Ochomogo, Maria G.; Pappalardo, Paul A.; and Swayne, Elizabeth N., to Clorox Company, The. Cleaning wipes. 6,340,663, Cl. 510-438.000.

Delianides, Kathryn D.: *See—*
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Dell Products, L.P.: *See—*
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Delphi Technologies INC: *See—*
Bona, Joseph M.; Burkett, Michael Jay; and Cochran, Theodore R., 6,340,293, Cl. 417-307.000.

Delphi Technologies, Inc.: *See—*
Dick, Malcolm David, 6,340,017, Cl. 123-467.000.
Eshleman, Edgar Samuel; and Deangelis, Gary John, 6,340,019, Cl. 123-469.000.
King, Gary Jack, 6,340,538, Cl. 429-96.000.
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Chuang, Te-tsai; Kuo, Wei-chen; Lin, Kuo-cheng; and Huang, Wen-shi, 6,340,292, Cl. 416-244.00R.

Demmert, Robert G.: *See—*
Corso, Martin, III; De Trana, Nicholas D.; DeCaluwe, Craig L.; and Demmert, Robert G., 6,341,158, Cl. 379-6.000.

Dennie, Shaun, to Sun Microsystems, Inc. Protocol for coordinating the distribution of shared memory. 6,341,338, Cl. 711-147.000.

Denso Corporation: *See—*
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Honda, Takayoshi, 6,341,253, Cl. 701-102.000.
Kinoshita, Kenji; Ishihara, Hideki; Kurimoto, Akira; Matsuzaki, Haruki; Yamamoto, Ryoichi; Yoshida, Akihiro; Nakamura, Ryouta; Kobayashi, Toshiki; and Katsuro, Hajime, 6,341,063, Cl. 361-690.000.
Maesoba, Kazuki; Naka, Yoshio; and Sugiyama, Masaru, 6,339,871, Cl. 29-596.000.
Makihara, Masamichi; Kuroyanagi, Isao; Nagasawa, Toshiya; and Torigoe, Eiichi, 6,339,937, Cl. 62-503.000.
Murowaki, Toru; Yagura, Toshiaki; Nakano, Yoshitaka; and Iida, Taku, 6,341,066, Cl. 361-707.000.
Nakae, Makoto; and Sugiyama, Tomio, 6,340,419, Cl. 204-429.000.
Yamada, Hirokazu, 6,340,809, Cl. 219-543.000.
Yamaguchi, Motohiro; Takasaki, Toshinobu; and Nishida, Shin, 6,339,932, Cl. 62-114.000.
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Denzel, Theodor: *See—*
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Durst, Roger D.; Carney, Sean N.; Diawara, Yacouba; and Shuvalov, Rudolph, 6,340,819, Cl. 250-374.000.

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LoBianco, Anthony J.; Juskey, Frank J.; Shermer, Stephen G.; DiCaprio, Vincent; and Glenn, Thomas P., 6,340,846, Cl. 257-783.000.

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Straub, Robert D.; Galloway, William M.; and Allsburg, Michael Van, 6,339,877, Cl. 29-888.420.

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Arimilli, Ravi Kumar; Dodson, John Steven; and Lewis, Jerry Don, 6,341,336, Cl. 711-144.000.

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Mayer, Scott C.; Dollings, Paul J.; and McDevitt, Robert E., 6,340,670, Cl. 514-25.000.

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O'Farrell, Desmond J.; Veldman, Roger L.; and Schofield, Kenneth, 6,340,850, Cl. 307-10.100.

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Polzer, Herwig, 6,340,231, Cl. 359-872.000.

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Basto, Luis A.; and Dougherty, W. David, 6,341,361, Cl. 714-726.000.

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Gonyou, Craig Alan; Doughty, Roger Lee; and Shelton, Monty Lee, 6,340,285, Cl. 415-116.000.

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Budd, Russell Alan; Dove, Derek Brian; and Rosenbluth, Alan Edward, 6,341,038, Cl. 359-487.000.

Downing, Kevin A., to LSI Logic Corporation. Hardware realized state machine. 6,341,367, Cl. 716-16.000.

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Madsen, Jeffrey C.; and Downing, Steven P., 6,340,155, Cl. 271-183.000.

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Tanner, Keith Edward; Draper, Peter Robert; Getz, John J.; Burnett, Stephen W.; and Youngblood, Elizabeth, 6,340,473, Cl. 424-451.000.

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Drost, James L.: *See*—
Gordin, Myron K.; and Drost, James L., 6,340,790, Cl. 174-45.00R.

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Horacek, Heinz; and Pieh, Stefan, 6,340,645, Cl. 442-138.000.

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Chapman, Brian Gregory; Clausen, Christian Henning; Mickish, Daniel James; and Vassiliou, Eustathios, 6,340,297, Cl. 425-174.400.

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Duke, Brian: *See*—
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Dulaney, Earl F.; and Waller, Matthew A., to Mercani Technologies, Inc. System, method and article of manufacture to optimize inventory and merchandising shelf space utilization. 6,341,269, Cl. 705-22.000.

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Scheindel, Christian T.; and Dundas, Dennis, 6,340,103, Cl. 222-402.150.

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Vandrak, Brian S.; DuRoss, John D., Jr.; and Haire, Allan L., 6,340,298, Cl. 432-222.000.

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Huber, Thomas; Dürrwächter, Martin; Urch, Matthias; and Kieser, Benedikt, 6,340,085, Cl. 198-782.000.

Durst, Roger D.; Carney, Sean N.; Diawara, Yacouba; and Shuvalov, Rudolph, to Bruker AXS, Inc. Readout structure and technique for electron cloud avalanche detectors. 6,340,819, Cl. 250-374.000.

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Kontothanassis, Leonidas; Scott, Michael L.; Stets, Robert; Dwarkadas, Sandhya; Hardavellas, Nikos; and Hunt, Galen, 6,341,339, Cl. 711-148.000.

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E-Guide, Inc.: *See*—
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Eastman Chemical Company: *See*—
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Eaton Corporation: *See*—
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Fujii, Toshiaki; Suzuki, Tsukuru; Suzuki, Hidetomo; and Sakamoto, Kazuhiko, 6,340,381, Cl. 95-63.000.

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ECI Telecom Ltd.: *See*—
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Edwards Lifesciences Corp.: *See*—
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Ehnebuske, David Lars: *See*—
Degenaro, Louis Ralph; Ehnebuske, David Lars; McKee, Barbara Jane Alspach; Rasmus, Kevin Paul; and Rouvellou, Isabelle Marie Catherine, 6,341,369, Cl. 717-1.000.

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Eino, Takashi, to Hitachi, Ltd. Multistage centrifugal compressor impeller for multistage centrifugal compressor and method for producing the same. 6,340,287, Cl. 415-199.100.

Eisai Co., Ltd.: *See*—
Ueno, Kohshi; Sasaki, Atsushi; Kawano, Koki; Okabe, Tadashi; Kitazawa, Noritaka; Takahashi, Keiko; Yamamoto, Noboru; Suzuki, Yuichi; Matsunaga, Manabu; and Kubota, Atsuhiko, 6,340,759, Cl. 544-358.000.

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Electro Scientific Industries, Inc.: *See*—
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Jackson, Bernard G., 6,341,017, Cl. 358-1.170.
Lum, Lambert Chun-Bob; Seidel, Craig; Guan, Zhengo (Mark); and Schwarz, James K., Jr., 6,341,307, Cl. 709-220.000.
Marsden, Jonathan; and Samadani, Ramin, 6,340,975, Cl. 345-590.000.
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Elfenthal, Lothar: *See*—
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Elfstrand, James K.: *See*—
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Chwalisz, Krzystof; Elger, Walter; Schmidt-Gollwitzer, Karin; and Ottow, Eckhard, 6,340,688, Cl. 514-277.000.

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Macias, William Louis, 6,340,699, Cl. 514-419.000.

Elkins, John I. Rebreather nebulizer device. 6,340,023, Cl. 128-200.210.

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Elster, Jennifer L.; Davis, Richey M.; and Jones, Mark E., to Luna Innovations, Inc. Extrinisic optical waveguide sensors. 6,341,185, Cl. 385-12.000.

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EMUGE-Werk Richard Glimpel Fabrik fuer Praezisionswerkzeuge vormals Moschkau & Glimpel: *See*—
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Endicott, Frederick J.: *See*—
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Görl, Udo; Stober, Reinhard; Lauer, Hartmut; and Ernst, Uwe, 6,340,724, Cl. 524-442.000.

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Wu, Alan K.; Evans, Bruce L.; and Duke, Brian, 6,340,053, Cl. 165-167.000.

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Grundy, David L., 6,340,913, Cl. 327-552.000.

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Dvorak, Charles A.; Wren, Douglas L.; Fisher, Lawrence E.; Axt, Steven D.; Humphreys, Eric R.; Arzeno, Humberto B.; Beard, Colin C.; Nguyen, Sam Linh; Han, Yeun-Kwei; Roberts, Christopher R.; Lund, Jan P.; and Fatheree, Paul R., 6,340,756, Cl. 544-276.000.

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Fielder, Coy M.; and Silva, Rogerio H., to Diamond Products International, Inc. Bi-center bit adapted to drill casing shoe. 6,340,064, Cl. 175-385.000.

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Bertacchini, Lucien; Chicherio, Michel; Fieschi, Jacques; and Le Pennec, Jean-Francois, 6,341,149, Cl. 375-356.000.

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Annamaa, Petteri; Kuittinen, Tero; Bordi, Mika; and Puurunen, Pertti, 6,340,954, Cl. 343-895.000.

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Merlin, Sylviane; Battail, Nicole; Flandrois, Jean-Pierre; and Carret, Gérard, 6,340,571, Cl. 435-7.330.

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Flexicon Corporation: *See—*
Gill, David R.; Graham, Dennis E.; and Simonof, John F., Jr., 6,340,100, Cl. 222-105.000.

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Dantas, Sergio Augusto Ferreira, 6,340,057, Cl. 166-337.000.

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Forman, Barbara: *See—*
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Forshey, Randy: *See—*
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Hiiro, Hiroyuki, 6,341,136, Cl. 372-26.000.
Imai, Shinji, 6,340,985, Cl. 347-212.000.
Inaba, Tadashi; Morimoto, Kiyoshi; and Hirano, Shigeo, 6,340,560, Cl. 430-455.000.
Inno, Toshifumi; and Hirano, Tsumoru, 6,340,526, Cl. 428-391.000.
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Ohtsuka, Hisashi; and Okazaki, Yoji, 6,341,139, Cl. 372-107.000.
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Akutsu, Eiichi; Ohtsu, Shigemi; and Pu, Lyong Sun, 6,340,544, Cl. 430-7.000.
Maehata, Hideo; Matsumura, Yasuo; Yoshizawa, Hisae; and Suwabe, Masaaki, 6,340,549, Cl. 430-111.400.
Yoshino, Naoto; and Takahashi, Masaaki, 6,341,205, Cl. 399-101.000.
Fujibayashi, Akira: *See*—
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Fujii, Mutsufumi: *See*—
Okuyama, Masatoshi; Sumiyama, Masahide; Okuzawa, Kazurou; and Fujii, Mutsufumi, 6,341,167, Cl. 381-407.000.
Fujii, Toshiaki; Suzuki, Tsukuru; Suzuki, Hidetomo; and Sakamoto, Kazuhiko, to Ebara Research Co., Ltd. Method and apparatus for the preparation of clean gases. 6,340,381, Cl. 95-63.000.
Fujikawa, Yasuji; Abe, Kazuo; and Ueda, Michio, to Shikoku Kakoki Co., Ltd. Packaging machine. 6,339,914, Cl. 53-565.000.
Fujimoto, Kazuhisa; and Fujibayashi, Akira, to Hitachi, Ltd. Disk array controller with connection path formed on connection request queue basis. 6,341,332, Cl. 711-113.000.
Fujimoto, Shinichi; and Kihara, Teruaki, to Mitsubishi Heavy Industries, Ltd. Ink fountain with two-position tray. 6,339,989, Cl. 101-367.000.
Fujinami, Yasushi, to Sony Corporation. Decoding method and decoding player and recording medium. 6,341,192, Cl. 386-52.000.
Fujinuma, Yoshitaka: *See*—
Nozawa, Kenji; Ainoya, Masayuki; Fujinuma, Yoshitaka; and Suzuki, Yuichiro, 6,341,210, Cl. 399-262.000.
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Fujioka, Shinya, to Fujitsu Limited. Semiconductor integrated circuit having circuit for writing data to memory cell. 6,341,100, Cl. 365-233.000.
Fujirebio Inc.: *See*—
Sugiyama, Masami, 6,340,596, Cl. 436-121.000.
Fujita, Hakaru: *See*—
Akaba, Toshihisa; Kurihara, Kazumichi; Sakai, Yasushi; Fujita, Hakaru; Ishiguro, Youichi; Iizuka, Isao; and Izumitani, Yukihiro, 6,340,226, Cl. 351-106.000.
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Yamamoto, Tsutomu; and Fujita, Hiroyuki, 6,341,278, Cl. 707-2.000.
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Nagasaka, Akio; Miyatake, Takafumi; Fujita, Takehiro; Taniguchi, Katsumi; and Tanaka, Kazuaki, 6,341,168, Cl. 382-107.000.
Fujita, Yasunobu; Yamamoto, Masao; Hachiya, Kouichi; Yokouchi, Atsushi; Yabe, Toshikazu; Shiraishi, Emiko; and Naka, Michiharu, to NSK Ltd. Rolling bearing for hard disk drive. 6,340,244, Cl. 384-462.000.
Fujitsu Limited: *See*—
Dedic, Ian Juso, 6,340,939, Cl. 341-136.000.
Fujioka, Shinya, 6,341,100, Cl. 365-233.000.
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Hachiya, Toshiyuki; Yamada, Tomoyoshi; Takekawa, Hiroshi; Kobayashi, Takuya; and Sasaki, Yuji, 6,341,051, Cl. 360-265.100.
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Sato, Tadashi; Izumi, Haruhiko; Kawasaki, Goro; and Shimokawa, Satoshi, 6,341,102, Cl. 369-13.000.
Taira, Yoshihiko; Houki, Youji; Nakayasu, Hirofumi; and Nagatomi, Tsutomu, 6,340,982, Cl. 347-130.000.
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Watanabe, Ichiro, 6,341,107, Cl. 369-44.290.
Watanabe, Shigeki, 6,341,026, Cl. 359-161.000.
Yamakawa, Hiroshi; Okada, Hiroyuki; and Watanabe, Nobuo, 6,341,283, Cl. 707-5.000.
Yoshida, Takashi; Watanabe, Masahide; and Taketomi, Nobuo, 6,340,797, Cl. 174-260.000.
Fujitsu Takamisawa Component Limited: *See*—
Shimizu, Nobuyoshi; Kondoh, Koichi; and Maeno, Chiaki, 6,340,924, Cl. 335-151.000.
Fujiwara, Nobuhiro; and Mamiya, Atsushi, to Sony Corporation. Bicycle equipped with drive assist. 6,340,067, Cl. 180-206.000.
Fujiwara, Shinsuke: *See*—
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Fukada, Shinichi; Nojiri, Kazuo; Yunogami, Takashi; Hotta, Shoji; Aoki, Hideo; Oshima, Takayuki; and Kobayashi, Nobuyoshi, to Hitachi, Ltd. Method of manufacturing a semiconductor device. 6,340,632, Cl. 438-622.000.
Fukashiro, Yasuyuki; Tsushima, Hideaki; and Hayashi, Yukio, to Hitachi, Ltd. Method and system for reducing optical surge. 6,341,032, Cl. 359-337.000.
Fukino, Kiyotaka: *See*—
Kawamura, Koichi; Maemoto, Kazuo; Yamasaki, Sumiaki; Sorori, Tadahiro; Tashiro, Hiroshi; and Fukino, Kiyotaka, 6,340,554, Cl. 430-270.100.
Fukuda, Hiroki: *See*—
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Fukuda, Joji: *See*—
Ishii, Toshiyuki; Misono, Kousuke; Misawa, Seiichi; Fukuda, Joji; Nishigaki, Tetsuo; and Ota, Kiyoshi, 6,341,047, Cl. 360-72.200.
Fukuda, Kenichi: *See*—
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Fukuda, Masao: *See*—
Masai, Eiji; Fukuda, Masao; Katayama, Yoshihiro; Nishikawa, Seiji; and Hotta, Yasushi, 6,340,579, Cl. 435-125.000.
Fukuda, Tetsuya; Nishimura, Takahiro; Sato, Jun; Ono, Koji; Nishimoto, Takumi; Ishihara, Yukihiro; and Sawada, Masaki, to Matsushita Electric Industrial Co., Ltd. Rotary encoder and multi-operational electronic component using the same. 6,340,801, Cl. 200-18.000.
Fukuhara, Aya: *See*—
Kawata, Tomoaki; Nakamura, Akira; Sakurai, Toshio; and Fukuhara, Aya, 6,340,649, Cl. 501-138.000.
Fukui, Atsushi; Ando, Kouji; and Imamura, Masaki, to Sumitomo Metal Mining Co., Ltd. Solution purification method for electrolyte. 6,340,427, Cl. 205-688.000.
Fukui, Masataka: *See*—
Zhou, Changming; Suzuki, Kunihiko; Tomatsu, Takashi; and Fukui, Masataka, 6,340,942, Cl. 341-158.000.
Fukui, Yukio: *See*—
Miyamoto, Makoto; Terao, Motoyasu; Fukui, Yukio; Tokushuku, Nobuhiro; Andoo, Keikichi; Nishida, Tetsuya; Hirotsune, Akemi; Miyauchi, Yasushi; and Moritani, Koichi, 6,340,555, Cl. 430-270.130.
Fukumoto, Ryoichi; Yamada, Katsuhisa; Ohhashi, Masao; Suzuki, Shintaro; and Suzuki, Seiichi, to Aisin Seiki Kabushiki Kaisha. Electricity feeding device for vehicular slide doors. 6,340,199, Cl. 296-155.000.
Fukunaga, Masanao: *See*—
Yamamoto, Kazuo; Hashimoto, Yoshito; and Fukunaga, Masanao, 6,340,209, Cl. 297-478.000.
Fukuyama, Takahiro: *See*—
Kita, Kazuhiko; Sugimoto, Yasuhiko; Yoshimura, Yasuharu; and Fukuyama, Takahiro, 6,340,446, Cl. 420-480.000.
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Hsieh, Bing R.; Yu, Yuan; Fuller, Timothy J.; Yanus, John F.; Pai, Damodar M.; Rommelmann, Heiko; Thompson, Allen J.; Stanton, Donald S.; Schlafer, Michelle L.; Kuntz, Alan R.; Kazakos, Ann M.; Wayman, William H.; and Hart, Steven C., 6,340,528, Cl. 428-412.000.
Fullerton, Kathy L.: *See*—
Lee, Sunggyu; Lanterman, H. Bryan; Pettit, Paul, Jr.; and Fullerton, Kathy L., 6,340,722, Cl. 524-428.000.
Fulmer, John William: *See*—
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Furakawa Electric Co., Ltd., The: *See*—
Mori, Yasutoshi; Yamamoto, Kouzi; Nakamizo, Kenzi; and Hashizume, Toshiaki, 6,340,050, Cl. 165-133.000.
Furlan, John Louis Warpakowski: *See*—
Driscoll, Edward C., Jr.; Wallerstein, Edward P.; Lomax, Willard C.; Parris, James E.; Furlan, John Louis Warpakowski; Bacho, Edward V.; and Carbo, Jorge E., Jr., 6,341,044, Cl. 359-725.000.
Furuhashi, Tsutomu; Konuma, Satoshi; Mori, Tatsumi; Kurihara, Hiroshi; Nishitani, Shigeyuki; Mori, Masashi; and Maeda, Takeshi, to Hitachi, Ltd. Liquid crystal display control device, liquid crystal display device using the same, and information processor. 6,340,970, Cl. 345-213.000.
Furukawa, Chisato: *See*—
Komoto, Satoshi; Nitta, Koichi; Suzuki, Nobuhiro; Konno, Kuniaki; Sugawara, Hideto; and Furukawa, Chisato, 6,340,824, Cl. 257-99.000.
Furukawa Electric Co., Ltd.: *See*—
Yagi, Yukihiro; and Tanaka, Hideo, 6,340,891, Cl. 324-551.000.
Furukawa, Kazuhiko, to Mitsubishi Pencil Kabushiki Kaisha. Ball-point pen. 6,340,261, Cl. 401-216.000.
Furukawa, Kazuhiko: *See*—
Mito, Yosuke; and Furukawa, Kazuhiko, 6,340,259, Cl. 401-198.000.
Furukawa, Tadahiro: *See*—
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Furukawa, Yosuke: *See*—
Ochiai, Toshiyuki; Furukawa, Yosuke; Tanaka, Yutaka; Kimura, Kozo; Hirai, Makoto; Kiyohara, Tokuzo; and Nishida, Hideshi, 6,340,973, Cl. 345-534.000.
Furuno, Takeshi: *See*—
Yamagami, Hajime; Terada, Kouichi; Hayashi, Yoshihiro; Tsunehiro, Takashi; Katayama, Kunihiro; Kaki, Kenichi; and Furuno, Takeshi, 6,341,085, Cl. 365-185.090.
Furutani, Kiyohiro: *See*—
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Furuya, Shuichi; Suzuki, Nobuhiro; Choh, Nobuo; and Nara, Yoshi, to Takeda Chemical Industries, Ltd. Thienopyrimidine compounds, their production and use. 6,340,686, Cl. 514-258.000.
Furuya, Takumi: *See*—

Hirai, Etsuro; Furuya, Takumi; Saka, Masato; and Taniguchi, Nobuyuki, 6,340,028, Cl. 134-122.00R.

Fuse, Kensaku: *See—*
Yoshida, Hiroshi; Ohmori, Kiyoshi; Fuse, Kensaku; Morita, Kazuhiro; Onduka, Yoshitaka; and Yokota, Naoyuki, 6,340,757, Cl. 544-319.000.

Fuselage Engineering Service, Ltd.: *See—*
Luria, David, 6,340,136, Cl. 244-118.100.

Futaba Denshi Kogyo Kabushiki: *See—*
Kawasaki, Hiroaki; and Ogawa, Yukio, 6,340,865, Cl. 315-169.100.

G-P Gypsum Corporation: *See—*
Klus, Donald F., 6,340,389, Cl. 106-675.000.

Gaddy, James L., to Bioengineering Resources, Inc. Biological production of products from waste gases. 6,340,581, Cl. 435-140.000.

Gadek, Thomas R.: *See—*
Peyman, Anuschirwan; Knolle, Jochen; Scheunemann, Karl-Heinz; Will, David William; Carniato, Denis; Gourvest, Jean-Francois; Gadek, Thomas R.; and Bodary, Sarah Catherine, 6,340,679, Cl. 514-218.000.

Galapagos Genomics N.V.: *See—*
Vogels, Ronald; Bout, Abraham; van Es, Helmuth; and Schouten, Govert, 6,340,595, Cl. 435-457.000.

Galaxy Development, LLC: *See—*
Belbruno, Edward A., 6,341,250, Cl. 701-13.000.

Galderma Research & Development: *See—*
Sumian, Chryslain; Pitre, Franck; and Mordon, Serge, 6,340,495, Cl. 427-1.000.

Galloway, William M.: *See—*
Straub, Robert D.; Galloway, William M.; and Allsburg, Michael Van, 6,339,877, Cl. 29-888.420.

Gallus, Timothy David. System and method for heating or cooling contents of flexible containers. 6,340,449, Cl. 422-307.000.

Gambino, Joseph: *See—*
Olsen, Jeff P.; and Gambino, Joseph, 6,340,334, Cl. 472-93.000.

Games, John E.: *See—*
Modeen, Douglas P.; Games, John E.; and Faust, Norman J., 6,341,238, Cl. 700-66.000.

Gan, Weiniu; Ye, Jane; Di Francesco, Valentina; and Beasley, Ellen M., to PE Corporation (NY). Isolated human kinase proteins, nucleic acid molecules encoding human kinase proteins, and uses thereof. 6,340,584, Cl. 435-194.000.

Garcia, François: *See—*
Bossoutrot, Jean-Michel; and Garcia, François, 6,340,452, Cl. 423-415.200.

Garcia Sanz, Francisco Jose: *See—*
Leon Fong, Betty Mireya; Pou Saracho, Juan Maria; Arias Otero, Jorge Luis; Garcia Sanz, Francisco Jose; Mayor Leiros, Mercedes Belen; Gonzalez Fernandez, Pio Manuel; and Perez-Martinez Y Perez-Amor, Mariano Jesus, 6,339,913, Cl. 53-425.000.

Gardner, Edward A.: *See—*
Krishnan, Sriram; Holley, Gregory L.; Gardner, Edward A.; and Maslak, Samuel H., 6,340,348, Cl. 600-447.000.

Garg, Vijay K.: *See—*
Damani, Om P.; Garg, Vijay K.; and Wang, Yi-Min, 6,341,262, Cl. 703-16.000.

Garnett, Inc.: *See—*
Cutler, Horace G.; Cutler, Stephen J.; Wright, David; and Dawson, Rodger, 6,340,468, Cl. 424-405.000.

Garrett, Gregg: *See—*
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Gasquet, Jean Claude: *See—*
Godbillon, Vincent; and Gasquet, Jean Claude, 6,340,239, Cl. 362-521.000.

Gassenmeier, Thomas; Schambil, Fred; and Millhoff, Juergen, to Henkel Kommanditgesellschaft auf Aktien (KGaA). Laundry detergent or cleaning product tablets with partial coating. 6,340,664, Cl. 510-441.000.

Gassenmeier, Thomas: *See—*
Millhoff, Juergen; Gassenmeier, Thomas; Liphard, Maria; Artiga González, Rene-Andres; Hammerstein, Stefan; and Kraus, Ingrid, 6,340,662, Cl. 510-417.000.

Gastgaber, Charles. Urea hydrochloride stabilized solvent for cleaning stainless steel and aluminum. 6,340,660, Cl. 510-255.000.

Gaudez, Philippe: *See—*
Charles, Patrick; Smit, Robert; Bordes, Jean-Luc; Bineau, Pierre; Gaudez, Philippe; and Jurado, Manuel, 6,340,124, Cl. 241-37.500.

Gavrilovic, Milan, to Nortel Networks Limited. Pilot-assisted amplifier linearization circuit. 6,340,914, Cl. 330-52.000.

Gaylor, Dean A., to Hewlett-Packard Company. Single-pass wiping system for inkjet printheads. 6,340,218, Cl. 347-33.000.

Gaylor, Dean A.; Millman, Michael S.; and Barinaga, John A., to Hewlett-Packard Company. Transferring spittoon system for waste inkjet ink. 6,340,220, Cl. 347-35.000.

Gbur, Uwe; Dietz, Martin; Brandenburg, Karlheinz; Gerhauser, Heinz; Herre, Jürgen; and Quackenbush, Schuyler, to Fraunhofer-Gesellschaft zur Förderdung der Angewandten Forschung E.V.; AT&T Laboratories/Research; and Lucent Technologies, Bell Laboratories. Coding and decoding of audio signals by using intensity stereo and prediction processes. 6,341,165, Cl. 381-23.000.

GE Medical Systems Global Technology Company, LLC: *See—*
Besson, Guy M., 6,341,154, Cl. 378-15.000.

Geerts, Peter: *See—*
Verschueren, Eric; and Geerts, Peter, 6,340,815, Cl. 250-318.000.

Geiser, Joseph Frank: *See—*
Sandstrom, Paul Harry; Geiser, Joseph Frank; Chu, Judy; Zanzig, David John; and Bauer, Richard George, 6,340,727, Cl. 525-191.000.

Gelbart, Daniel, to Creo S.R.L. Inspection method for unpopulated printed circuit boards. 6,340,817, Cl. 250-341.600.

Gelderie, Udo: *See—*
Frommelt, Simon; Gelderie, Udo; and Plum, Guido, 6,340,508, Cl. 428-34.000.

Gelles, Rubin: *See—*
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Gemma, Hideaki: *See—*
Kondo, Nobukazu; Kaneko, Seiji; Okazawa, Koichi; Gemma, Hideaki; Mochida, Tetsuya; and Hayashi, Takehisa, 6,341,323, Cl. 710-129.000.

Gendreau, Richard K.: *See—*
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Genentech, Inc.: *See—*
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General Dynamics Advanced Technology Systems, Inc.: *See—*
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General Electric Company: *See—*
Aksit, Mahmut Faruk; Chupp, Raymond Edward; and Dinc, Osman Saim, 6,340,286, Cl. 415-173.300.
Aristovich, Valery Jurievich; Aristovich, Yury Valerievich; Fulmer, John William; and Sokolov, Andrey Jurievich, 6,340,777, Cl. 568-411.000.
Castonguay, Roger N.; and Christensen, Dave, 6,340,925, Cl. 335-172.000.
Coenen, Nicolaas Petrus Maria; Gerritsen, Jan Cornelis; Grootveld, Rolf; Oyevaar, Martin Herke; Vandenbussche, Raimund Frans; and Zirkzee, Hendricus Franciscus, 6,340,736, Cl. 528-196.000.
Frey, David A., 6,340,047, Cl. 164-137.000.
Gonyou, Craig Alan; Doughty, Roger Lee; and Shelton, Monty Lee, 6,340,285, Cl. 415-116.000.
Halila, Ely E.; Greenfield, Stuart C.; Heberling, Paul V.; Bibler, John D.; and Kastl, John A., 6,339,923, Cl. 60-37.310.
Hoyer, James Cottrell; Gronostaj, Richard Walter; and Baldwin, Daniel Kelly, 6,339,924, Cl. 60-39.020.
Hung, Stephen Lan-Sun; Lovett, Jeffery Alan; Beebe, Kenneth Winston; Cutrone, Martin Bernard; and Correa, Sanjay Marc, 6,339,925, Cl. 60-39.060.
Jakab, Csaba; Kohán, László; Scott, Ronald Francis; and Schneider, Jerome John, Jr., 6,340,861, Cl. 313-318.070.
Salvo, Joseph James; Mackenzie, Patricia Denise; Bennett, Janet Sue; Relyea, Heather Ann; and Morelli, Thomas Anthony, II, 6,341,271, Cl. 705-28.000.
Shimoda, Tomoaki; and Sakashita, Takeshi, 6,340,738, Cl. 528-196.000.
Spitsberg, Irene Theodor, 6,340,500, Cl. 427-250.000.
Wheat, Gary Eugene; Brown, Terri Kay; and Schumacher, Thomas Phillip, 6,339,879, Cl. 29-889.721.

General Electrical Company: *See—*
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General Hospital Corporation, The: *See—*
Tearney, Guillermo J.; Bouma, Brett E.; and Webb, Robert H., 6,341,036, Cl. 359-368.000.

General Scanning Inc.: *See—*
Smart, Donald V.; and Svetkoff, Donald J., 6,340,806, Cl. 219-121.620.

General Scientific Corporation: *See—*
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Genesis Engineering Company: *See—*
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Genet, Alain; and Lagrange, Alain, to L'Oreal S.A. Cationic orthophenylenediamines, their use for the oxidation dyeing of keratin fibers, dye compositions and dyeing processes. 6,340,371, Cl. 8-406.000.

Genetics Institute, Inc.: *See—*
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Gerhauser, Heinz: *See—*
Gbur, Uwe; Dietz, Martin; Brandenburg, Karlheinz; Gerhauser, Heinz; Herre, Jürgen; and Quackenbush, Schuyler, 6,341,165, Cl. 381-23.000.

Gerritse Beheer B.V.: *See—*
Gerritse, Jan, 6,340,030, Cl. 137-403.000.

Gerritse, Jan, to Gerritse Beheer B.V. Apparatus for metering a plurality of different liquid or pasty materials. 6,340,030, Cl. 137-403.000.

Gerritsen, Jan Cornelis: *See—*
Coenen, Nicolaas Petrus Maria; Gerritsen, Jan Cornelis; Grootveld, Rolf; Oyevaar, Martin Herke; Vandenbussche, Raimund Frans; and Zirkzee, Hendricus Franciscus, 6,340,736, Cl. 528-196.000.

Gerstenberg, John W.; and Van, Hung P., to Raytheon Company. Solid state magnetron switcher. 6,340,912, Cl. 327-506.000.

Gerstenberger, Michael D.; Greig, Scott D.; Martin, David M.; Mirza, Khalid; and Waled, El-Houssaine, to KUKA Development Laboratories, Inc. Object oriented motion system. 6,341,246, Cl. 700-245.000.

Gervais, Eric, to Duchesnay Inc. Rapid onset formulation. 6,340,695, Cl. 514-345.000.

Geske, Jonathan: *See—*

Jayaraman, Vijaysekhar; Geske, Jonathan; and Peters, Frank, 6,341,137, Cl. 372-50.000.

Getz, John J.: *See*—
Tanner, Keith Edward; Draper, Peter Robert; Getz, John J.; Burnett, Stephen W.; and Youngblood, Elizabeth, 6,340,473, Cl. 424-451.000.

Ghahramani, Massoud; Offenbacher, Helmut; and Ritter, Christoph, to F. Hoffmann-La Roche AG. Chloride-sensitive electrode membrane. 6,340,714, Cl. 521-88.000.

Ghisalba, Oreste; Marais, Guy Joel Christian; and Martin, Pierre, to Novartis AG. Phosphorus containing cyclic nucleotides. 6,340,754, Cl. 544-244.000.

Giangrante, George. "Double Cross™" game show. 6,340,159, Cl. 273-272.000.

Gibbs, Richard: *See*—
Burgess, Kevin; and Gibbs, Richard, 6,340,750, Cl. 536-26.600.

Giesen, Claudia: *See*—
Buchmann, Bernd; Frohlich, Wolfgang; Giesen, Claudia; Hennekes, Hartwig; Jaroch, Stefan; and Skuballa, Werner, 6,340,706, Cl. 514-560.000.

Gill, David R.; Graham, Dennis E.; and Simonof, John F., Jr., to Flexicon Corporation. Apparatus for securing a bulk bag to a discharge spout. 6,340,100, Cl. 222-105.000.

Gillis, John R., to Gillis, John R. Verification of thermal sterilization. 6,340,590, Cl. 435-287.400.

Ginet, Marc; and Le Feron De Longcamp, Michel, to Elf Atochem S.A. Frontage element with decorative facing. 6,339,906, Cl. 52-235.000.

Girardeau, James Ward, Jr., to Level One Communications, Inc. Method and apparatus for minimizing transient sampling fluctuations upon transition between modes of communication. 6,341,148, Cl. 375-355.000.

Glass, Bryce Alan; and Parsons, Paige K., to Netscape Communications Corporation. Inline tree filters. 6,341,280, Cl. 707-3.000.

Glassen, Steven G.; Turner, Jeffrey M.; Ratcliff, Bruce H.; and Valley, Stephen R., to International Business Machines Corporation. Method and apparatus for providing concurrent patch using a queued direct input-output device. 6,341,321, Cl. 710-104.000.

Glenn, Thomas P.: *See*—
LoBianco, Anthony J.; Juskey, Frank J.; Shermer, Stephen G.; DiCaprio, Vincent; and Glenn, Thomas P., 6,340,846, Cl. 257-783.000.

Glück, Guiscard; Hahn, Klaus; Kaempfer, Knut; Naegele, Dieter; and Braun, Frank, to BASF Aktiengesellschaft. Expandable styrene polymers containing graphite particles. 6,340,713, Cl. 521-60.000.

Glynn, Kenneth P., to Ideal Ideas, Inc. Waterslide toy block construction system. 6,340,323, Cl. 446-89.000.

Godbillon, Vincent; and Gasquet, Jean Claude, to Valeo Vision. Indicator light with uniform illuminating surface for a motor vehicle. 6,340,239, Cl. 362-521.000.

Goeb, Siegfried R.; and Graichen, Andreas H., to 3M-Innovative Properties Company. Crosslinking process. 6,340,719, Cl. 522-174.000.

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Goldberg, Kenneth A., to University of California, The Regents of the. Graphical user interface for image acquisition and processing. 6,341,183, Cl. 382-276.000.

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Herman, Gary; Goldstein, Theodore Charles; and Martinez, Ronald G., 6,341,353, Cl. 713-201.000.

Goliff, William: *See*—
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Gomez, Fernando J.: *See*—
Abbey, Kirk J.; Gomez, Fernando J.; and Wagener, Kenneth B., 6,340,731, Cl. 526-241.000.

Gonyou, Craig Alan; Doughty, Roger Lee; and Shelton, Monty Lee, to General Electric Company. End rail cooling for combined high and low pressure turbine shroud. 6,340,285, Cl. 415-116.000.

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Gooding, John B.: *See*—
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Goodman, Mark A; Bishop, William; Zeno, John R., deceased; and Mabbs-Zeno, by Linda, executrix, to UE Systems, Inc. Ultrasonic detecting lubrication apparatus with acoustically isolated transducer. 6,339,961, Cl. 73-593.000.

Goodyear, Gary: *See*—
Shields, Charles John; and Goodyear, Gary, 6,340,781, Cl. 570-177.000.

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Sandstrom, Paul Harry; Geiser, Joseph Frank; Chu, Judy; Zanzig, David John; and Bauer, Richard George, 6,340,727, Cl. 525-191.000.

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Damarla, Sreenivasa Rao; Sridhar, Srinivasa; and Gopinathan, Mambully Chandrasekaran, 6,340,484, Cl. 424-761.000.

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Gore, David Roman. Toilet including an apparatus supplying detergent to the water tank. 6,339,850, Cl. 4-227.200.

Gore Enterprise Holdings, Inc.: *See*—
Jayaraman, Vijaysekhar; Geske, Jonathan; and Peters, Frank, 6,341,137, Cl. 372-50.000.
Peters, Frank; and MacDougal, Michael H., 6,341,138, Cl. 372-96.000.

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Gotkis, Yehiel: *See*—
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Gotlieb, Kornelis Fester: *See*—
Van Soest, Jeroen Johannes Gerardus; Van Schijndel, Renée Josie Gide; and Gotlieb, Kornelis Fester, 6,340,527, Cl. 428-402.200.

Goto, Kenichi, to Fujitsu Limited. Manufacture of semiconductor device. 6,340,617, Cl. 438-303.000.

Goto, Masaaki: *See*—
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Goto, Takashi: *See*—
Kobori, Takeo; Goto, Tomoko; Kondo, Hitoshi; Tsuboi, Hiroyuki; Iiyama, Mika; Asada, Toru; and Goto, Takashi, 6,340,697, Cl. 514-364.000.

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Gould-Fogerite, Susan: *See*—
Margolis, David; Gould-Fogerite, Susan; and Mannino, Raphael James, 6,340,591, Cl. 435-320.100.

Gourvest, Jean-Francois: *See*—
Peyman, Anuschirwan; Knolle, Jochen; Scheunemann, Karl-Heinz; Will, David William; Carniato, Denis; Gourvest, Jean-Francois; Gadek, Thomas R.; and Bodary, Sarah Catherine, 6,340,679, Cl. 514-218.000.

Gouzu, Manabu: *See*—
Mendenhall, Todd C.; and Gouzu, Manabu, 6,341,198, Cl. 386-98.000.

Grady, Darren K.: *See*—
McConnaughy, Michael P.; and Grady, Darren K., 6,340,086, Cl. 206-307.100.

Graf, Edwin X.; Foster, Daniel J.; and Angel, Douglas H., to Voith Sulzer Paper Technology North America, Inc. Method of making a roll for paper-making machine. 6,339,883, Cl. 29-895.320.

Graff, Klaus: *See*—
Arndt, Wolfgang; Graff, Klaus; Hamberger, Alfons; and Heim, Petra, 6,340,642, Cl. 438-780.000.

Graham, Dennis E.: *See*—
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Graham, James; and Evans, Jerald, to Sun Microsystems, Inc. Method and apparatus for stroke substitution. 6,340,981, Cl. 345-863.000.

Graham, James D.: *See*—
Yach, David P.; Graham, James D.; and Scian, Anthony F., 6,341,288, Cl. 707-103.00R.

Graichen, Andreas H.: *See*—
Goeb, Siegfried R.; and Graichen, Andreas H., 6,340,719, Cl. 522-174.000.

Grancini, Giancarlo: *See*—
Napoletano, Mauro; Norcini, Gabriele; Grancini, Giancarlo; Pellacini, Franco; and Morazzoni, Gabriele, 6,340,684, Cl. 514-248.000.

Granderson, Daniel Dean; and Curry, Christopher Dorman. ATV liquid transport apparatus. 6,340,177, Cl. 280-833.000.

Granstrom, Magnus: *See*—
Petritsch, Klaus; and Granstrom, Magnus, 6,340,789, Cl. 136-263.000.

Grass GmbH: *See*—
Albrecht, Markus; and Muller, Wolfgang, 6,339,864, Cl. 16-258.000.
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Graver Technologies, Inc.: *See*—

Kunin, Robert; Yarnell, Peter A.; and Pennisi, Nichole L., 6,340,712, Cl. 521-26.000.

Graves Spray Supply, Inc.: *See*—
Hedger, Thomas A.; and Bullock, Jeff Neal, 6,340,283, Cl. 415-60.000.

Gray, Michael R.: *See*—
Kloba, David D.; Gray, Michael R.; Moore, David M.; Whittaker, Thomas E.; Williams, David J.; Weinstein, Rafael Z.; Freeman, Joshua E.; and Upson, Linus M., 6,341,316, Cl. 709-248.000.

Gray, Peter Philip: *See*—
Hunt, Sybille Marie; Gray, Peter Philip; and Sleigh, Merilyn Joy, 6,340,574, Cl. 435-69.100.

Greason, Jeffrey K.: *See*—
Zhao, Cangsang; and Greason, Jeffrey K., 6,341,326, Cl. 711-104.000.

Green, Albert Myron: *See*—
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Green, Michael M., to Broadcom Corporation. Current-controlled CMOS circuits with inductive broadbanding. 6,340,899, Cl. 326-115.000.

Green, Susan L.: *See*—
Obukowicz, Mark; Kabakibi, Ayman; Green, Susan L.; Olson, Lisa M.; and Lindemann, Julie, 6,340,705, Cl. 514-560.000.

Greenberg, Michael R.: *See*—
Bryars, Brett J.; Greenberg, Michael R.; and Sullivan, Sean, 6,340,230, Cl. 353-31.000.

Greenfield, Stuart C.: *See*—
Halila, Ely E.; Greenfield, Stuart C.; Heberling, Paul V.; Bibler, John D.; and Kastl, John A., 6,339,923, Cl. 60-37.310.

Greig, Scott D.: *See*—
Gerstenberger, Michael D.; Greig, Scott D.; Martin, David M.; Mirza, Khalid; and Waled, El-Houssaine, 6,341,246, Cl. 700-245.000.

Greivenkamp, John E., Jr.; and Lowman, Andrew E., to Canadian Space Agency. Mid-spatial frequency digital boost filter. 6,341,181, Cl. 382-260.000.

Gretag Imaging AG: *See*—
Kraft, Walter, 6,341,008, Cl. 355-67.000.

Griepentrog, Dal Frank: *See*—
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Grierson, Jonathon: *See*—
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Grierson, Thomas Harvey: *See*—
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Griesemer, Daniel A.; and Bauer, Paul F., to Mobile Impact, Inc. Spring biased assembly for mounting flexible sheet on structure. 6,339,889, Cl. 40-603.000.

Grilliot, Mary I.: *See*—
Grilliot, William L.; and Grilliot, Mary I., 6,339,843, Cl. 2-97.000.

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Grimm, Tom: *See*—
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Gronostaj, Richard Walter: *See*—
Hoyer, James Cottrell; Gronostaj, Richard Walter; and Baldwin, Daniel Kelly, 6,339,924, Cl. 60-39.020.

Grootveld, Rolf: *See*—
Coenen, Nicolaas Petrus Maria; Gerritsen, Jan Cornelis; Grootveld, Rolf; Oyevaar, Martin Herke; Vandenbussche, Raimund Frans; and Zirkzee, Hendricus Franciscus, 6,340,736, Cl. 528-196.000.

Gross Manufacturing Corporation: *See*—
Farah, Robert N.; and Kanouse, Thomas J., 6,339,890, Cl. 40-750.000.

Grossman, Miriam: *See*—
Korobov, Vladimir; Grossman, Miriam; and Rockman, Sylvie, 6,340,620, Cl. 438-396.000.

Grosu, George T.: *See*—
Levin, Jeremy I.; Venkatesan, Aranapakam M.; Cole, Derek C.; Chen, James M.; Davis, Jamie M.; and Grosu, George T., 6,340,691, Cl. 514-307.000.

Groz-Beckert KG: *See*—
Majer, Sigmar; Schuler, Bernhard, deceased; Wiedenhöfer, Kurt; Morita, Toshiaki; and Kitahara, Kenji, 6,339,942, Cl. 66-120.000.

Gruber, Peter Alfred: *See*—
Berger, Daniel George; Brouillette, Guy Paul; Danovitch, David Hirsch; Gruber, Peter Alfred; Humphrey, Bruce Lee; Liehr, Michael; Motsiff, William Thomas; and Sambucetti, Carlos Juan, 6,340,630, Cl. 438-613.000.

Grummon, Jeffrey L.; and Franklin, Chris R., to Adaptec, Inc. System and method for disk control with snapshot feature including read-write snapshot half. 6,341,341, Cl. 711-162.000.

Grundy, David L., to Fast Analog Solutions Limited. Filter circuit with positive feedback loop. 6,340,913, Cl. 327-552.000.

Gryk, Thomas Joseph: *See*—
McBrien, Gregory J.; Kissa, Karl M.; Hallemeier, Peter; and Gryk, Thomas Joseph, 6,341,031, Cl. 359-237.000.

GSF Forschungszentrum für Umwelt und Gesundheit GmbH: *See*—
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GSI Lumonics, Inc.: *See*—
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Gu, Sung-Jin, to Samsung Electronics Co., Ltd. Quick start apparatus for a display and method thereof. 6,340,968, Cl. 345-211.000.

Guan, Zhengo (Mark): *See*—
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Guardian Containment Corp.: *See*—
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Guardian Industries Corporation: *See*—
Pike, Ryan E.; and Veerasamy, Vijayen S., 6,340,192, Cl. 296-91.000.

Gueret, Jean-Louis H., to L'Oreal. Dispenser for dispensing a stick of product. 6,340,258, Cl. 401-87.000.

Gujar, Anuj Uday: *See*—
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Gunji, Yasuhiro: *See*—
Okude, Mariko; Endo, Yoshinori; Gunji, Yasuhiro; and Nakamura, Kozo, 6,341,254, Cl. 701-208.000.

Gupta, Subhash: *See*—
Chooi, Simon; Aliyu, Yakub; Zhou, Mei Sheng; Sudijono, John; Gupta, Subhash; Roy, Sudipto Ranendra; Ho, Paul; and Yi, Xu, 6,340,608, Cl. 438-108.000.

Gurevich, Vladimir A.: *See*—
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Gutierrez, Adolfo O.; Aceto, Steven C.; and Simkulet, Michelle D., to InterScience, Inc. Microsystems integrated testing and characterization system and method. 6,341,259, Cl. 702-117.000.

Gutsche, Bernhard: *See*—
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Gutsell, Graham Scott: *See*—
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Guzman-Casillas, Armando, to Schweitzer Engineering Laboratories, Inc. Restraint-type differential relay. 6,341,055, Cl. 361-81.000.

Ha, Jun-Yong: *See*—
Joo, Yung Hyup; Lee, Chang Hoon; Noh, Min-Soo; Ha, Jun-Yong; Choi, Jin Kyu; Lim, Kyung Min; Kim, Jin Kwan; and Kang, Seon-Hwa, 6,340,694, Cl. 514-337.000.

Ha, Thanh: *See*—
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Haaland, David M., to Sandia Corporation. Hybrid least squares multivariate spectral analysis methods. 6,341,257, Cl. 702-27.000.

Haas, Gunther: *See*—
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Haasen, Rolf; Wedershoven, Hans-Günter; and Theele, Bernd-Rüdiger, to W. Schlafhorst AG & Co. Method for operating a workstation of a cheese-producing textile machine. 6,340,129, Cl. 242-419.100.

Habedank, Klaus-Dieter, to Bertrand Faure Sitztechnik GmbH & Co. KG. Motor vehicle seat, in particular back seat. 6,340,208, Cl. 297-322.000.

Hachisuka, Nozomu; Maeda, Toshiaki; and Inage, Kenji, to TDK Corporation. Method and apparatus for testing composite type magnetic head. 6,340,885, Cl. 324-210.000.

Hachiya, Kouichi: *See*—
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Hachiya, Toshiyuki; Yamada, Tomoyoshi; Takekawa, Hiroshi; Kobayashi, Takuya; and Sasaki, Yuji, to Fujitsu Limited. Disk drive having external shock resistance. 6,341,051, Cl. 360-265.100.

Haddad, Moran: *See*—
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Haenni Instruments AG: *See*—
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Haerer, Wolfgang: *See*—
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Hagan, Stephen C., to LSI Logic Corporation. Exclusive multiple queue handling using a common processing algorithm. 6,341,301, Cl. 709-100.000.

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Hagen, Todd: *See*—
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Hagne, Leif; and Jönsson, Lars, to Athena Nordic AB. Extensible polishing mono-filament dental floss. 6,340,027, Cl. 132-321.000.

Hahn, Klaus: *See*—
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Haire, Allan L.: *See*—
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Haji, Hiroshi: *See*—
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Haldor Topsoe A/S: *See*—
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Schoubye, Peter; Nielsen, Poul Erik Højlund; and Blom, Niels Jørgen, 6,340,003, Cl. 123-3.000.

Hale, Richard D.: *See*—
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Hale, Wesley R.: *See*—
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Halff, Glenn A.: *See*—
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Halila, Ely E.; Greenfield, Stuart C.; Heberling, Paul V.; Bibler, John D.; and Kastl, John A., to General Electric Company. Fuel air mixer for a radial dome in a gas turbine engine combustor. 6,339,923, Cl. 60-37.310.

Hall, Arizona; and Hall, John Henry. Truckbox cover and sidewall extension attachment. 6,340,195, Cl. 296-100.070.

Hall, Brett O. Computerized parking facility management system. 6,340,935, Cl. 340-932.200.

Hall, John Henry: *See*—
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Hall, Thomas A., III: *See*—
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Hallemeier, Peter: *See*—
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Halpin, Brett: *See*—
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Ham, William: *See*—
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Hama, Kazuaki; and Kobayashi, Fumiya, to Bridgestone Corporation. Weighing apparatus. 6,340,799, Cl. 177-238.000.

Hama, Takashi: *See*—
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Hamada, Kazuya; Morita, Shingo; Murata, Shigemi; and Koiwa, Mitsuru, to Mitsubishi Denki Kabushiki Kaisha. High tension connection portion structure of an ingition device for an internal combustion engine. 6,340,303, Cl. 439-127.000.

Hamada, Shinji; Fujioka, Noriyuki; Marukawa, Shuhei; and Eto, Toyohiko, to Matsushita Electric Industrial Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Structure for connecting a plurality of battery modules to constitute a battery pack. 6,340,311, Cl. 439-429.000.

Hamada, Takatoshi; Hiraguchi, Hiroshi; Goto, Masaaki; and Satake, Takeshi, to Minolta Co., Ltd. Multi-beam image recording apparatus. 6,340,983, Cl. 347-131.000.

Hamamura, Toshihiro: *See*—
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Hamanaka, Tadashi: *See*—
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Hamasaka, Hiroshi: *See*—
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Hamdi, Maher: *See*—
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Hamery, Bruno; and Liu, Jin Ming, to Valeo Climatisation. Device for air conditioning a motor-vehicle passenger compartment, with improved ventilation control. 6,339,933, Cl. 62-133.000.

Hammerstein, Stefan: *See*—
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Hammond, Steven P.; and Boyd, Randy L., to Lear Corporation. Throw-in mat for a vehicle floor. 6,340,513, Cl. 428-95.000.

Han, Hak Gi: *See*—
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Han, Li: *See*—
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Han, Yeun-Kwei: *See*—
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Handa, Akio; Maki, Yuji; Suzuki, Shoji; Amaki, Kiyoshi; and Sato, Junichi, to Honda Giken Kogyo Kabushiki Kaisha; Zeniya Aluminum Engineering, Limited; and Daido Kogyo Co., Ltd. Wheel for vehicle. 6,340,210, Cl. 301-64.400.

Hanks, Charlene C. One piece garment with boot portions of adjustable size. 6,339,847, Cl. 2-269.000.

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Hirano, Tsumoru: *See—*
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Ashizawa, Keiichiro; Hikiba, Masayuki; and Ohta, Masuyuki, 6,341,003, Cl. 349-141.000.
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Hashimoto, Yutaka; Sasaki, Hideaki; Kobayashi, Mamoru; and Kazui, Shinichi, 6,340,109, Cl. 228-103.000.
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Kanai, Hiroki; Inoue, Yasuo; and Takamoto, Yoshifumi, 6,341,335, Cl. 711-137.000.
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Kondo, Nobukazu; Kaneko, Seiji; Okazawa, Koichi; Gemma, Hideaki; Mochida, Tetsuya; and Hayashi, Takehisa, 6,341,323, Cl. 710-129.000.
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Miyaki, Yoshinori; Suzuki, Kazunari; and Omoda, Daisuke, 6,340,837, Cl. 257-666.000.
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Seki, Kunio; Tsunoda, Toshiyuki; Kokami, Yasuhiko; and Kawauchi, Kunihiro, 6,340,873, Cl. 318-254.000.
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Tamamoto, Junichi; Yamashita, Taichiro; and Nakajima, Kichio, 6,340,804, Cl. 209-584.000.
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Yamada, Hiromichi; Miura, Ichiro; Doi, Motomichi; Miyazaki, Osamu; and Yoshida, Minoru, 6,340,436, Cl. 252-301.450.

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Kawata, Hideaki; Ishii, Kei; Hayashi, Koichiro; Aoki, Yoshimasa; Ehira, Atsushi; Maki, Kunio; and Toriumi, Masaki, 6,340,377, Cl. 75-236.000.

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Miyaki, Yoshinori; Suzuki, Kazunari; and Omoda, Daisuke, 6,340,837, Cl. 257-666.000.

Ho, Herbert L.: *See—*
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Ho, Mark: *See—*
Ho, Stanley; and Ho, Mark, 6,340,099, Cl. 222-78.000.

Ho, Paul: *See—*
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Ho, Seng Beng, to E-Book Systems PTE LTD. Computer user interface system and method having book image features. 6,340,980, Cl. 345-776.000.

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Ho, Stanley; and Ho, Mark, to Allure Home Creation Co., Inc. Container with a structural improvement. 6,340,099, Cl. 222-78.000.

Ho, Tsyr-Chyang: *See—*
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Hoang, Peter Phung Minh; Jeremic, Dusan; Kearns, Jason Roy; Coulter, Iain McLaren; and Donaldson, Robert D., to Nova Chemicals (International) S. A. "Sweet" MAO. 6,340,771, Cl. 556-171.000.
Hobaugh, James Martin, II, to TRW Inc. Seal for integral power steering gear. 6,340,162, Cl. 277-594.000.
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Chang, Jen Jou, 6,340,315, Cl. 439-660.000.
Jones, Dennis B.; and Wong, Eddy, 6,340,304, Cl. 439-138.000.
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Handa, Akio; Maki, Yuji; Suzuki, Shoji; Amaki, Kiyoshi; and Sato, Junichi, 6,340,210, Cl. 301-64.400.
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Mita, Yoshinori; and Anazawa, Makoto, 6,340,877, Cl. 320-112.000.
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Johnson, Steven C., 6,341,248, Cl. 701-4.000.
Micko, Eric S., 6,340,816, Cl. 250-338.300.
Porter, Simon J.; Moulton, Jeffrey D.; and Altizer, Lance R., 6,340,530, Cl. 428-474.400.
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Horton, Stuart Alexander Leslie; Vijgen, Renier Olga Ernst; Cundill, Robin Thomas; and Sjöström, Hans, to SKF Engineering & Research Centre B.V. Coated rolling element bearing. 6,340,245, Cl. 384-492.000.
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Hosokawa, Tetsuo; Hamamura, Toshihiro; Takahashi, Hiroyuki; Iwamoto, Shigeru; Ohkura, Tadahisa; and Kaneko, Hidefumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Operation dial with an illuminator for a camera. 6,341,202, Cl. 396-281.000.
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Yoon, Jin Young, 6,340,636, Cl. 438-672.000.

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Mosig, Karsten; Stecher, Matthias; and Schwetlick, Werner, 6,340,616, Cl. 438-268.000.

Ingraham, Karen Anne; So, Chi Yong; Van Horn, Stephanie; Chalker, Alison Francis; Holmes, David John; Biswas, Sanjoy; Brown, James Raymond; Burnham, Martin Karl Russel; Warren, Patrick Vernon; Warren, Richard Lloyd; and Zalacain, Magdalena, to SmithKline Beecham Corporation. yhxB. 6,340,564, Cl. 435-6.000.

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Budd, Russell Alan; Dove, Derek Brian; and Rosenbluth, Alan Edward, 6,341,038, Cl. 359-487.000.
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Chadwick, Thomas B., 6,341,079, Cl. 365-49.000.
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Coden, Anna Rosa; Brereton, JoAnn Piersa; and Schwartz, Michael Stephen, 6,341,277, Cl. 707-2.000.
Curran, Thomas F., Jr.; Krywanczyk, Timothy C.; Lube, Michael S.; Moon, Matthew D.; Nadeau, Rock; Reynolds, Clark D.; Schaffer, Dean A.; Sharrow, Joel M.; Smith, Paul H., Jr.; Thomas, David C.; White, Eric J.; and Yao, Kenneth H., 6,340,601, Cl. 438-4.000.
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Burg, Josef; Hilger, Bernd; and Josel, Hans-Peter, 6,340,742, Cl. 530-351.000.

Joseph, Eugene: *See—*
Correa, Mark; Gelles, Rubin; He, Duanfeng; Joseph, Eugene; Li, Yajun; Patel, Mehul; and Stankelis, Thomas M., 6,340,114, Cl. 235-462.220.
He, Duanfeng; Hunter, Kevin; and Joseph, Eugene, 6,340,119, Cl. 235-494.000.

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Watts, LaVaughn F., Jr.; Verdun, Gary; Juenger, Randall E.; and Grimm, Tom, 6,341,320, Cl. 710-101.000.

Jun, Duk-Jo. Apparatus for opening/closing a valve and method thereof. 6,340,029, Cl. 137-1.000.

Junghähnel, Michael: *See—*
Goedicke, Klaus; Winkler, Torsten; Junghähnel, Michael; Fietzke, Fred; Kirchhoff, Volker; and Reschke, Jonathan, 6,340,416, Cl. 204-192.120.

Junqua, Jean-Claude: *See—*
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Jurado, Manuel: *See—*
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Juskey, Frank J.: *See—*
LoBianco, Anthony J.; Juskey, Frank J.; Shermer, Stephen G.; DiCaprio, Vincent; and Glenn, Thomas P., 6,340,846, Cl. 257-783.000.

Kabakibi, Ayman: *See—*
Obukowicz, Mark; Kabakibi, Ayman; Green, Susan L.; Olson, Lisa M.; and Lindemann, Julie, 6,340,705, Cl. 514-560.000.

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Okawa, Koji; Kashiwazaki, Takao; Kubota, Shuichi; Endo, Tadashi; Tanino, Masato; and Kabeshita, Akira, 6,340,132, Cl. 242-566.000.

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Takeda, Mitsuo, 6,340,278, Cl. 414-140.900.

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Ogawa, Tsuneshi; Maruyama, Toshiharu; Kozuki, Haruya; and Ozaki, Shintaro, 6,340,396, Cl. 148-23.000.
Tsune, Kiyoshi; and Asano, Fumiki, 6,340,048, Cl. 164-418.000.

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Nagashima, Katsushi, 6,339,968, Cl. 74-473.250.

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Ando, Hideo; and Unno, Hiroaki, 6,341,196, Cl. 386-95.000.
Ando, Hideo; and Unno, Hiroaki, 6,341,197, Cl. 386-95.000.
Inoue, Soichi; Kyoh, Suigen; Higashikawa, Iwao; and Mori, Ichiro, 6,340,542, Cl. 430-5.000.
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Kihara, Naoko; Yuasa, Fumihiko; Ushirogouchi, Tohru; Tada, Tsukasa; Sasaki, Osamu; Naito, Takuya; and Saito, Satoshi, 6,340,552, Cl. 430-270.100.
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Sasagawa, Gouki; Nakamura, Tetsuya; and Ogasawara, Masato, 6,340,515, Cl. 428-192.000.
Shimizu, Kazuhiro; Aritome, Seiichi; Watanabe, Toshiharu; and Narita, Kazuhito, 6,340,611, Cl. 438-201.000.
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Kabushikikaisya Kyoma: *See—*
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Kadatskyy, Anatoly F.; Karpov, Yevgen V.; Soynikov, Vyacheslav Y.; and Volovets, Naum I., to Next Power Corporation. Loss reduction circuit for switching power converters. 6,341,076, Cl. 363-56.120.

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Kagawa, Takushi: *See—*
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Kaiho, Masayuki; Mori, Hideaki; Kieda, Shigekazu; Shiobara, Ryoichi; Hattori, Kenichi; and Komura, Akiyoshi, to Hitachi, Ltd. Electric rotating machine. 6,340,853, Cl. 310-61.000.

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Kajitani, Yoshimi: *See*—
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Kaki, Kenichi: *See*—
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Kalidindi, Sanyasi R. Bulk powder sampler with removable partitions and method of using. 6,339,966, Cl. 73-864.310.

Kalkowski, Klaus: *See*—
Altekrüger, Burkhard; Aufreiter, Joachim; Brüss, Dieter; and Kalkowski, Klaus, 6,341,173, Cl. 382-141.000.

Kamada, Kenji, to Shimano Inc. Bicycle sprocket. 6,340,338, Cl. 474-160.000.

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Kamijo, Atsushi: *See*—
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Kamimura, Teruki: *See*—
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Kamiyama, Hideyo, to Pioneer Corporation. Servo device for recording medium player. 6,341,113, Cl. 369-53.150.

Kamiyama, Toshifumi; Kunieda, Toshiaki; and Okazaki, Sadayuki, to Matsushita Electric Industrial Co., Ltd. Device and method for manufacturing an optical recording medium. 6,340,501, Cl. 427-255.600.

Kamstrup-Larsen, Jørgen, to Casco A/S. Spreader for spreading a fluid, such as an adhesive. 6,340,122, Cl. 239-548.000.

Kanagawa, Tatsuya: *See*—
Ogawa, Noriyoshi; Kanagawa, Tatsuya; and Nakatani, Hidekazu, 6,340,737, Cl. 528-196.000.

Kanai, Hiroki; Inoue, Yasuo; and Takamoto, Yoshifumi, to Hitachi, Ltd. Information processing system for read ahead buffer memory equipped with register and memory controller. 6,341,335, Cl. 711-137.000.

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Kanbe, Shinobu; Kondo, Masashi; and Nishimura, Motohide, to Tokai Rubber Industries, Ltd. Fuel hose. 6,340,511, Cl. 428-36.910.

Kanda, Hidehiko: *See*—
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Kaneko, Hidefumi: *See*—
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Kaneko, Seiji: *See*—
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Kang, Dong Cheol: *See*—
Ro, Jin Tae; Kang, Dong Cheol; Lee, Jae Hyoung; Park, Tae Joon; and Seo, Kang Soo, 6,341,112, Cl. 369-47.290.

Kang, Hee Bok, to Hyundai Electronics Industries Co. Ltd. Circuit for driving nonvolatile ferroelectric memory. 6,341,081, Cl. 365-145.000.

Kang, Ho-Woong, to Samsung Electronics, Co. Ltd. Horizontal-deflection correction circuit. 6,340,871, Cl. 315-370.000.

Kang, Seong Ho, to LG Electronics Inc. Plasma display panel driving method and apparatus thereof. 6,340,867, Cl. 315-169.400.

Kang, Seon-Hwa: *See*—
Joo, Yung Hyup; Lee, Chang Hoon; Noh, Min-Soo; Ha, Jun-Yong; Choi, Jin Kyu; Lim, Kyung Min; Kim, Jin Kwan; and Kang, Seon-Hwa, 6,340,694, Cl. 514-337.000.

Kang, Seung Gon: *See*—
Kim, Byung-Hee; Kim, Sun Hwa; Kang, Seung Gon; Shin, Hyun Eok; and Choi, Young Il, 6,340,998, Cl. 349-48.000.

Kanno, Hiroshi, to NEC Corporation. Level conversion circuit having differential circuit employing MOSFET. 6,340,911, Cl. 327-333.000.

Kanno, Satoshi: *See*—
Enomoto, Kunio; Hirano, Katsuhiko; Hayashi, Eisaku; Morinaka, Ren; Shimizu, Sadato; Kanno, Satoshi; Tanaka, Shigeru; and Ishikawa, Tetsuya, 6,341,151, Cl. 376-305.000.

Kanoh, Yasushi, to NEC Corporation. Flow controlling method and apparatus for network between processors. 6,341,313, Cl. 709-227.000.

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Farah, Robert N.; and Kanouse, Thomas J., 6,339,890, Cl. 40-750.000.

Kaplan, Daniel Joseph; Schorr, Ralph Hartman; Allison, Ronny Lamar; and Willoughby, Barney Russell, Jr., to Thrall Car Manufacturing Company. *Railcar with trackless support for radial end door.* 6,339,994, Cl. 105-404.000.

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Karl, Mark Thomas: *See*—
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Karl Storz GmbH & Co. KG: *See*—
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Karol, Frederick J.: *See*—
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Kasahara, Tomokazu, to NEC Corporation. MIM capacitor having reduced capacitance error and phase rotation. 6,340,832, Cl. 257-532.000.

Kashimoto, Masami: *See*—
Sugano, Toshihiko; Iwama, Naoshi; Isobe, Eiji; Suzuki, Toru; Maruyama, Yasuo; Hayakawa, Satoshi; Shoda, Hisashi; Kashimoto, Masami; Kato, Taku; Aoshima, Takayuki; Nishimura, Sugio; Suga, Yoshinori; and Sieber, Stefan, 6,340,652, Cl. 502-118.000.

Kashiwazaki, Takao: *See*—
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Kashmiri, Ray Reza; Kitchen, George H., III; and Peck, Manuel Johnny, to International Lubrication & Fuel Consultants, Inc. Leak detection and structural assessment. 6,339,951, Cl. 73-40.000.

Kasparak, Manfred: *See*—
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Kastl, John A.: *See*—
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Oka, Motohiro; Tsuchiya, Mitsuru; Nakamura, Norinaga; Takematus, Kiyotaka; Ota, Yurie; Suzuki, Hiroko; Yamashita, Natsuko; and Katagiri, Hiroomi, 6,340,404, Cl. 156-230.000.

Katayama, Kunihiro: *See*—
Yamagami, Hajime; Terada, Kouichi; Hayashi, Yoshihiro; Tsunehiro, Takashi; Katayama, Kunihiro; Kaki, Kenichi; and Furuno, Takeshi, 6,341,085, Cl. 365-185.090.

Katayama, Yoshihiro: *See*—
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Shigehara, Kiyotaka; Katayama, Yoshihiro; Nishikawa, Seiji; and Hotta, Yasushi, 6,340,739, Cl. 528-310.000.

Kather, Lutz: *See*—
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Katnani, Ahmad D.: *See*—
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Kato, Hideyuki: *See*—
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Kato, Hiroshi; Mochizuki, Naoto; and Kono, Hiroyuki, to Tokuyama Corporation. Polishing slurry and polishing method. 6,340,374, Cl. 51-308.000.

Kato, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device having multiple power-supply nodes and capable of self-detecting power-off to prevent erroneous operation. 6,340,902, Cl. 327-77.000.

Kato, Koki: *See*—
Marui, Shogo; Hazama, Masatoshi; Notoya, Kohei; and Kato, Koki, 6,340,704, Cl. 514-463.000.

Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, to Hitachi, Ltd. Vacuum processing apparatus and operating method therefor. 6,339,887, Cl. 34-406.000.

Kato, Takayuki: *See*—
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Kato, Takeshi: *See*—
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Kato, Taku: *See*—

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Kato, Tetsuaki: *See—*
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Kato, Yoshihisa, to Toyota Jidosha Kabushiki Kaisha. Pedal supporting structure of a vehicle. 6,339,971, Cl. 74-512.000.

Katou, Michiya; Sawafuji, Kazunori; and Momose, Akira, to Pacific Industrial Co., LTD. *Transmitter and external controller of tire inflation pressure* monitor. 6,340,929, Cl. 340-447.000.

Katsube, Yasuhiro; Saito, Takeshi; Takabatake, Yoshiaki; Hashimoto, Mikio; and Tanaka, Hisako, to Kabushiki Kaisha Toshiba. Node device and *method for controlling label switching path set up in inter-connected* networks. 6,341,127, Cl. 370-352.000.

Katsura, Hiroshi: *See—*
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Katsuro, Hajime: *See—*
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Kawabata, Yasutomo; Matsuhashi, Shigeru; Takagi, Nobuyoshi; Kanamori, Akihiko; and Yamada, Eiji, to Toyota Jidosha Kabushiki Kaisha. Power output apparatus and method of controlling the same. 6,340,847, Cl. 290-40.00C.

Kawabata, Yuichiro: *See—*
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Kawachi, Genshiro: *See—*
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Kawamoto, Yoji; and Kurihara, Akira, to Sony Corporation. Information providing apparatus and portable communication terminal. 6,341,133, Cl. 370-401.000.

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Kawamura, Koichi; Maemoto, Kazuo; Yamasaki, Sumiaki; Sorori, Tadahiro; Tashiro, Hiroshi; and Fukino, Kiyotaka, to Fuji Photo Film Co., Ltd. Radiation-sensitive planographic printing plate. 6,340,554, Cl. 430-270.100.

Kawamura, Kozo, to Sammy Corporation. Premium supply apparatus and *lock mechanism of hook for premium supply apparatus.* 6,340,094, Cl. 221-79.000.

Kawamura, Tetsuya: *See—*
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Kawanishi, Hidenori; and Shimonaka, Atsushi, to Sharp Kabushiki Kaisha. Waveguide type optical integrated circuit element and method for fabricating same. 6,340,605, Cl. 438-31.000.

Kawano, Kenji, to Canon Kabushiki Kaisha. Light-quantity controlling *device and apparatus using the same.* 6,340,252, Cl. 396-450.000.

Kawano, Koki: *See—*
Ueno, Kohshi; Sasaki, Atsushi; Kawano, Koki; Okabe, Tadashi; Kitazawa, Noritaka; Takahashi, Keiko; Yamamoto, Noboru; Suzuki, Yuichi; Matsunaga, Manabu; and Kubota, Atsuhiko, 6,340,759, Cl. 544-358.000.

Kawano, Noriyuki: *See—*
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Kawano, Shuro, to BSP International Corporation. Method and apparatus for generating and distributing reports. 6,341,286, Cl. 707-101.000.

Kawano, Yuzo: *See—*
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Kawasaki, Hiroaki; and Ogawa, Yukio, to Futaba Denshi Kogyo Kabushiki. Fluorescent display device and method for driving same. 6,340,865, Cl. 315-169.100.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
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Kawasaki Steel Corporation: *See—*
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Kawasaki, Takayuki: *See—*
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Kawata, Hideaki; Ishii, Kei; Hayashi, Koichiro; Aoki, Yoshimasa; Ehira, Atsushi; Maki, Kunio; and Toriumi, Masaki, to Hitachi Powdered Metals Co., Ltd.; and Nissan Motor Co., Ltd. High-temperature wear-resistant sintered alloy. 6,340,377, Cl. 75-236.000.

Kawata, Tomoaki; Nakamura, Akira; Sakurai, Toshio; and Fukuhara, Aya, to TDK Corporation. Composition of dielectric ceramics and producing method thereof. 6,340,649, Cl. 501-138.000.

Kawauchi, Ikuo: *See—*
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Kawauchi, Kunihiro: See—
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Kawazu, Mitsuhiro: *See—*
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Kayama, Takashi: *See—*
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Kayanuma, Kinji, to NEC Corporation. Defective area replacement method and information writing/reading device. 6,341,109, Cl. 369-47.140.

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Hsieh, Bing R.; Yu, Yuan; Fuller, Timothy J.; Yanus, John F.; Pai, Damodar M.; Rommelmann, Heiko; Thompson, Allen J.; Stanton, Donald S.; Schlafer, Michelle L.; Kuntz, Alan R.; Kazakos, Ann M.; Wayman, William H.; and Hart, Steven C., 6,340,528, Cl. 428-412.000.

Kazui, Shinichi: *See—*
Hashimoto, Yutaka; Sasaki, Hideaki; Kobayashi, Mamoru; and Kazui, Shinichi, 6,340,109, Cl. 228-103.000.

Kearns, Jason Roy: *See—*
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Keil, Daniel, to Tenneco Automotive Inc. Shock absorber having ported plate low speed tunability. 6,340,081, Cl. 188-322.150.

Keithly, James H.; Pollack, Harold; and Taggart, Thomas, to Tropicana Products, Inc. Juices incorporating early season orange cultivars and method of making. 6,340,493, Cl. 426-599.000.

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Sugita, Naoki, 6,340,307, Cl. 439-326.000.
Sugita, Naoki, 6,340,308, Cl. 439-326.000.

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Kelly, Graham E., to Novogen, Inc. Treatment or prevention of osteoporosis. 6,340,703, Cl. 514-456.000.

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Boie, Christian; Kemper, Hans; Kather, Lutz; and Corde, Gilles, *6,340,008, Cl. 123-90.110.*

Kempfle, Thomas: *See—*
Kopetzky, Robert; and Kempfle, Thomas, 6,340,127, Cl. 242-382.200.

Kenjo, Yukiko: *See—*
Nishimori, Yasutomo; Matsumoto, Katsuo; and Kenjo, Yukiko, 6,340,677, Cl. 514-169.000.

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Simonds, Vincent; Gendreau, Richard K.; and Kennedy, Thomas J., III, 6,340,503, Cl. 427-393.500.

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Kerr, Robert C.; and Burke, William O., III, to Milliken & Company. Cushioned rubber floor mat article comprising at least one integrated rubber protrusion and at least two layers of rubber. 6,340,514, Cl. 428-159.000.

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Kettrup, Antonius: *See—*
Bengsch, Eberhard; Polster, Jürgen; and Kettrup, Antonius, 6,339,950, Cl. 73-23.360.

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Foo, Chek-Peng; Munch, Carl A.; Cash, Steven M.; DeZorzi, Timothy; Khairallah, Farid; Cooper, Stephen R. W.; Yeh, Huahn-Fern; and Sumner, Paul Leo, 6,341,252, Cl. 701-45.000.

Khan, Babar A.: *See—*
Iyer, Sundar K.; Divakaruni, Rama; Ho, Herbert L.; Iyer, Subramanian; and Khan, Babar A., 6,340,615, Cl. 438-248.000.

Khan, Soudy, to Polaris Pool Systems, Inc. SPA chemistry monitor and treatment unit. 6,340,431, Cl. 210-85.000.

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Nakanishi, Kazuhiro; Takano, Kunikazu; Kibayashi, Hiroshi; Nakanishi, Hiromi; Takaba, Tetsufumi; Hiroshima, Wataru; Takeda, Tsuyoshi; Aoki, Akira; and Onda, Kanichi, 6,341,200, Cl. 396-6.000.

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Niki, Motohiro; and Kidachi, Atsushi, 6,339,998, Cl. 119-72.500.

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Huber, Thomas; Dürrwächter, Martin; Urch, Matthias; and Kieser, Benedikt, 6,340,085, Cl. 198-782.000.

Kihara, Naoko; Yuasa, Fumihiko; Ushirogouchi, Tohru; Tada, Tsukasa; *Sasaki, Osamu; Naito, Takuya; and Saito, Satoshi, to Kabushiki Kaisha Toshiba. Photosensitive composition containing a dissolution inhibitor and* an acid releasing compound. 6,340,552, Cl. 430-270.100.

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Shirasaki, Yasuyo; Tanabe, Tomoko; and Kikuchi, Chuichi, 6,341,176, Cl. 382-229.000.

Kikuchi, Masanori: *See*—
Imura, Kohichi; Uemoto, Hideo; Hojo, Akimichi; Tanaka, Junzo; Kikuchi, Masanori; Suetsugu, Yasushi; Yamazaki, Hiraku; Kinoshita, Masami; and Minowa, Nobuaki, 6,340,648, Cl. 501-80.000.

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Kim, Jin Kwan: See—
Joo, Yung Hyup; Lee, Chang Hoon; Noh, Min-Soo; Ha, Jun-Yong; Choi, Jin Kyu; Lim, Kyung Min; Kim, Jin Kwan; and Kang, Seon-Hwa, 6,340,694, Cl. 514-337.000.

Kim, Jong-woo; and Lee, Hyong-gu, to Sasung Electronics Co., Ltd. Method of controlling an ink agitator of a wet-type electrophotography printer. 6,341,209, Cl. 399-237.000.

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Hong, Sung Kwon; Kwon, Sung Lark; Yun, Young Woo; and Kim, Ki *Jun, 6,341,125,* Cl. 370-335.000.

Kim, Kyoung Hung: *See*—
Bourne, David Allan; Williams, Duane Thomas; Kim, Kyoung Hung; Krishnan, Sivaraj Sivarama; and Hazama, Kensuke, 6,341,243, Cl. 700-165.000.

Kim, Nam Seog: See—
Chung, Tae Gyeong; and Kim, Nam Seog, 6,340,838, Cl. 257-668.000.

Kim, Sun Hwa: *See*—
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Kwon, Young-Ee; Whang, Kyu Ja; and Kim, Won Kyu, 6,340,770, Cl. 556-137.000.

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Bjorkman, Claes H.; Yu, Min Melissa; Shan, Hongquing; Cheung, David W.; Yau, Wai-Fan; Liu, Kuowei; Chapra, Nasreen Gazala; Yin, Gerald; Moghadam, Farhad K.; Huang, Judy H.; Yost, Dennis; Tang, Betty; and Kim, Yunsang, 6,340,435, Cl. 216-72.000.

Kimata, Akinori: *See*—
Tsujimoto, Takahiro; and Kimata, Akinori, 6,341,211, Cl. 399-330.000.

Kimatsu, Michio: *See*—
Muraguchi, Ryo; Nakashima, Akira; Tonai, Atsushi; Kimatsu, Michio; Machida, Katsuyuki; Kyuragi, Hakaru; and Imai, Kazuo, 6,340,641, Cl. 438-763.000.

Kimberly-Clark Worldwide, Inc.: *See*—
Brunson, Kevin K.; Pinney, Marc E.; McCarty, Barbara A.; Rasberry, Frank D.; and Fields, Sheldon T., 6,339,888, Cl. 36-7.10R.

Kimmelman, Eugene: *See*—
Blatt, Yoav; Kimmelman, Eugene; Cohen, David; and Rotman, Avner, 6,340,478, Cl. 424-489.000.

Kimpara, Masaomi: *See*—
Takayanagi, Norikazu; Kimpara, Masaomi; and Suzuki, Munehiro, 6,340,656, Cl. 504-367.000.

Kimura, Fujimi: *See*—
Kubota, Toshio; Sugawara, Masumi; Horinaka, Takehiro; and Kimura, Fujimi, 6,340,558, Cl. 430-320.000.

Kimura, Kozo: *See*—
Ochiai, Toshiyuki; Furukawa, Yosuke; Tanaka, Yutaka; Kimura, Kozo; Hirai, Makoto; Kiyohara, Tokuzo; and Nishida, Hideshi, 6,340,973, Cl. 345-534.000.

Kimura, Masatoshi: *See*—
Sasaki, Sachio; Kodama, Jun; Mikami, Tomohisa; and Kimura, Masatoshi, 6,341,207, Cl. 399-149.000.

Kimura, Yuji: *See*—
Kohashi, Takashi; Ogino, Akira; Moriwaki, Hisayoshi; Kimura, Yuji; and Ikeda, Nozomu, 6,341,141, Cl. 375-137.000.

King, Gary Jack, to Delphi Technologies, Inc. Modular battery tray assembly. 6,340,538, Cl. 429-96.000.

King, Molly K.: *See*—
Schein, Steven M.; Warden, David P.; King, Molly K.; Alba, Theresa A.; and Russman, Robert E., 6,341,374, Cl. 725-43.000.

King, Richard R.; Karam, Nasser H.; and Haddad, Moran, to Hughes Electronics Corporation. Multijunction photovoltaic cells and panels using a silicon or silicon-germanium active substrate cell for space and terrestrial applications. 6,340,788, Cl. 136-261.000.

Kinney, Frederick D.: *See*—
Lane, Donald R.; Melendez, Jose A.; Munteanu, Violeta F.; and Kinney, Frederick D., 6,340,438, Cl. 252-387.000.

Kinoshita, Kenji; Ishihara, Hideki; Kurimoto, Akira; Matsuzaki, Haruki; Yamamoto, Ryoichi; Yoshida, Akihiro; Nakamura, Ryouta; Kobayashi, *Toshiki; and Katsuro, Hajime, to Denso Corporation. Installation structure* of printed-circuit board for electronic control unit. 6,341,063, Cl. 361-690.000.

Kinoshita, Masami: *See*—
Imura, Kohichi; Uemoto, Hideo; Hojo, Akimichi; Tanaka, Junzo; Kikuchi, Masanori; Suetsugu, Yasushi; Yamazaki, Hiraku; Kinoshita, Masami; and Minowa, Nobuaki, 6,340,648, Cl. 501-80.000.

Kinoshita, Osamu: *See*—
Mizuno, Hiroshi; Kinoshita, Osamu; Murohashi, Tetsuaki; Ueno, Akihisa; Sakuma, Yoshifumi; and Amberiadis, Kostas, 6,340,434, Cl. 216-38.000.

Kinoshita, Yohei: *See*—
Oomori, Katsumi; Yukawa, Hiroto; Yamazaki, Akiyoshi; Tani, Kazuo; Kinoshita, Yohei; and Yamada, Tomotaka, 6,340,553, Cl. 430-270.100.

Kiong, Low Kok: *See*—
Nguyen, Michael Anh; Zheng, Tang; and Kiong, Low Kok, 6,341,114, Cl. 369-77.100.

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Kirchhoff, Volker: *See*—
Goedicke, Klaus; Winkler, Torsten; Junghähnel, Michael; Fietzke, Fred; Kirchhoff, Volker; and Reschke, Jonathan, 6,340,416, Cl. 204-192.120.

Kirk, Steven A.: *See*—
MacNicol, Roger Dermot; Kirk, Steven A.; Bello, Randall George; Rao, Jun; and Yang, Katherine Tsouya, 6,341,281, Cl. 707-3.000.

Kishimoto, Shoichi: *See*—
Koyama, Akihiro; Kishimoto, Shoichi; Kurachi, Junji; and Yamamoto, Nobuyuki, 6,340,647, Cl. 501-69.000.

Kishita, Shin: *See*—
Segawa, Teruo; Matsubara, Jyun; Okuyama, Kaoru; Ueda, Yukihide; Takahashi, Shyouichi; Nakamura, Setsuo; Urakami, Kazuo; and Kishita, Shin, 6,339,874, Cl. 29-824.000.

Kissa, Karl M.: *See*—
McBrien, Gregory J.; Kissa, Karl M.; Hallemeier, Peter; and Gryk, Thomas Joseph, 6,341,031, Cl. 359-237.000.

Kistler, Rod; and Gotkis, Yehiel, to Lam Research Corporation. System and method for controlled polishing and planarization of semiconductor wafers. 6,340,326, Cl. 451-286.000.

Kita, Kazuhiko; Sugimoto, Yasuhiko; Yoshimura, Yasuharu; and Fukuyama, Takahiro, to YKK Corporation. Nickel-free white copper alloy. 6,340,446, Cl. 420-480.000.

Kitade, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor wafer having a multi-test circuit, and method for manufacturing a semiconductor device including multi-test process. 6,340,823, Cl. 257-48.000.

Kitagawa, Kouji: *See*—
Iino, Eiichi; and Kitagawa, Kouji, 6,340,391, Cl. 117-13.000.

Kitahara, Kenji: *See*—
Majer, Sigmar; Schuler, Bernhard, deceased; Wiedenhöfer, Kurt; Morita, Toshiaki; and Kitahara, Kenji, 6,339,942, Cl. 66-120.000.

Kitahara, Mikio; Mori, Minehiro; Mineta, Naoshi; and Kayama, Takashi, to Mitsui Chemicals, Inc. Flexible metal-clad laminates and preparation of the same. 6,340,518, Cl. 428-215.000.

Kitamura, Hiroshi: *See*—
Matsumoto, Hideki; Kitamura, Hiroshi; and Horiuchi, Masaaki, 6,340,031, Cl. 137-513.300.

Kitamura, Masakazu: *See*—
Nakazawa, Akira; Kitamura, Masakazu; Tamai, Kiyoshi; and Nagai, Makoto, 6,340,964, Cl. 345-100.000.

Kitano, Kenichi: *See*—
Tanaka, Koji; Kitano, Kenichi; and Masuda, Toshiaki, 6,340,519, Cl. 428-327.000.

Kitazawa, Noritaka: *See*—
Ueno, Kohshi; Sasaki, Atsushi; Kawano, Koki; Okabe, Tadashi; Kitazawa, Noritaka; Takahashi, Keiko; Yamamoto, Noboru; Suzuki, Yuichi; Matsunaga, Manabu; and Kubota, Atsuhiko, 6,340,759, Cl. 544-358.000.

Kitchen, George H., III: *See*—
Kashmiri, Ray Reza; Kitchen, George H., III; and Peck, Manuel Johnny, 6,339,951, Cl. 73-40.000.

Kiyohara, Tokuzo: *See*—
Ochiai, Toshiyuki; Furukawa, Yosuke; Tanaka, Yutaka; Kimura, Kozo; Hirai, Makoto; Kiyohara, Tokuzo; and Nishida, Hideshi, 6,340,973, Cl. 345-53+.000.

Klein, Michael A.: *See*—

Johnson, Mitchell D.; Klein, Michael A.; Parks, Matthew David; Karl, Mark Thomas; Johnson, Patrick; Spahr, Tim; Sajna, Jeff; Andrews, Craig; Higgins, Kenneth Terry; Lowery, Robert A.; Ruby, Keith D.; Mitchell, Alton; and Davis, Rhonda L., 6,340,186, Cl. 293-120.000.

Klein, Paul F.; and Ammerman, Raymond P., III, to Candle Distributed Solutions, Inc. End-to-end response time measurement for computer programs using starting and ending queues. 6,341,260, Cl. 702-186.000.

Kleinhoff, Klaus: *See—*
Huinink, Heinrich; Köbe, Andreas; Fries, Volkmar; and Kleinhoff, Klaus, 6,339,956, Cl. 73-146.000.

Kline, Daniel S: *See—*
McKay, Kerry N; Yamamoto, Junji; Osmus, James M; Zepeda, Caroline; Hay, Mark A; Escobedo, Victor T; and Kline, Daniel S, 6,340,256, Cl. 400-624.000.

Kling, Robert; and Wall, Berth-Ove, to SCA Hygiene Products Aktiebolag. Method of securing an elastic band and an article that includes such an elastic band. 6,340,782, Cl. 604-366.000.

Kloba, David D.; Gray, Michael R.; Moore, David M.; Whittaker, Thomas E.; Williams, David J.; Weinstein, Rafael Z.; Freeman, Joshua E.; and Upson, Linus M., to AvantGo, Inc. System, method, and computer program product for synchronizing content between a server and a client based on state information. 6,341,316, Cl. 709-248.000.

Klukowski, Horst; and Vermeiden, Peter, to Bestfoods. Food products suitable for frying after rehydration and process for their production. 6,340,492, Cl. 426-557.000.

Klukowski, Horst; Stute, Rolf; and Speth, Gerhard, to Bestfoods. Dry product which can be reconstituted with hot aqueous liquids and process for its production. 6,340,494, Cl. 426-640.000.

Klus, Donald F., to G-P Gypsum Corporation. Fire door core. 6,340,389, Cl. 106-675.000.

Knoll, Peter; Haas, Gunther; and Wagner, Arndt, to Robert Bosch GmbH. Lighting unit. 6,340,232, Cl. 362-26.000.

Knolle, Jochen: *See—*
Peyman, Anuschirwan; Knolle, Jochen; Scheunemann, Karl-Heinz; Will, David William; Carniato, Denis; Gourvest, Jean-Francois; Gadek, Thomas R.; and Bodary, Sarah Catherine, 6,340,679, Cl. 514-218.000.

Knopf, Eric Andrew: *See—*
Eisbach, Christopher; Knopf, Eric Andrew; Pai, Derek Solomon; Ramirez, Ramiro; Selker, Edwin Joseph; and Wyant, Todd C., 6,341,061, Cl. 361-687.000.

Ko, David Tso-Chin, to Hon Hai Precision Ind. Co., Ltd. Cable end connector having a complete EMI shielding. 6,340,312, Cl. 439-582.000.

Ko, Sang-Gi, to LG Semicon Co., Ltd. Capacitor and method of fabricating the same. 6,340,619, Cl. 438-396.000.

Kobayashi, Fumiya: *See—*
Hama, Kazuaki; and Kobayashi, Fumiya, 6,340,799, Cl. 177-238.000.

Kobayashi, Mamoru: *See—*
Hashimoto, Yutaka; Sasaki, Hideaki; Kobayashi, Mamoru; and Kazui, Shinichi, 6,340,109, Cl. 228-103.000.

Kobayashi, Nobuyoshi: *See—*
Fukada, Shinichi; Nojiri, Kazuo; Yunogami, Takashi; Hotta, Shoji; Aoki, Hideo; Oshima, Takayuki; and Kobayashi, Nobuyoshi, 6,340,632, Cl. 438-622.000.

Kobayashi, Osamu: *See—*
Yamauchi, Yoshiyuki; Yamamoto, Ken; Kobayashi, Osamu; Ohta, Minoru; and Nagasawa, Toshiya, 6,340,055, Cl. 165-174.000.

Kobayashi, Takuya: *See—*
Hachiya, Toshiyuki; Yamada, Tomoyoshi; Takekawa, Hiroshi; Kobayashi, Takuya; and Sasaki, Yuji, 6,341,051, Cl. 360-265.100.

Kobayashi, Toshiki: *See—*
Kinoshita, Kenji; Ishihara, Hideki; Kurimoto, Akira; Matsuzaki, Haruki; Yamamoto, Ryoichi; Yoshida, Akihiro; Nakamura, Ryouta; Kobayashi, Toshiki; and Katsuro, Hajime, 6,341,063, Cl. 361-690.000.

Kobayashi, Yoshiaki: *See—*
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Kobayashi, Yoshiyuki: *See—*
Honda, Takeshi; Kobayashi, Yoshiyuki; Masuda, Takeshi; Yamashita, Makoto; and Arai, Masami, 6,340,702, Cl. 514-451.000.

Köbe, Andreas: *See—*
Huinink, Heinrich; Köbe, Andreas; Fries, Volkmar; and Kleinhoff, Klaus, 6,339,956, Cl. 73-146.000.

Kobori, Isamu: *See—*
Arai, Michio; Kobori, Isamu; and Mitsuhashi, Etsuo, 6,340,537, Cl. 428-690.000.

Kobori, Takeo; Goto, Tomoko; Kondo, Hitoshi; Tsuboi, Hiroyuki; Iiyama, Mika; Asada, Toru; and Goto, Takashi, to Dainippon Ink and Chemicals, Inc. Oxime derivatives and agricultural chemicals containing the same. 6,340,697, Cl. 514-364.000.

Koch, Juergen: *See—*
Bueschken, Wilfried; Wiese, Klaus-Diether; Protzmann, Guido; and Koch, Juergen, 6,340,778, Cl. 568-463.000.

Kocsis, Jody A.; Blystone, Sheri L.; Bardasz, Ewa A.; and DeTar, Marvin B., to Lubrizol Corporation, The. Metal salts of lactones as lubricant additives. 6,340,659, Cl. 508-518.000.

Kocur, Michael A.: *See—*
Zhang, Mingbao; Kocur, Michael A.; and Martin, Mary Frances, 6,340,773, Cl. 564-384.000.

Kodama, Jun: *See—*
Sasaki, Sachio; Kodama, Jun; Mikami, Tomohisa; and Kimura, Masatoshi, 6,341,207, Cl. 399-149.000.

Koduri, Sreenivasan K., to Texas Instruments Incorporated. Stepwise autorotation of wire bonding capilliary. 6,340,112, Cl. 228-180.500.

Koenig & Bauer Aktiengellschaft: *See—*
Schäfer, Karl Robert, 6,339,988, Cl. 101-351.700.

Koenig, Gottfried; and Menz, Werner, to EJOT Verbindungstechnik GmbH & Co KG. Self-tapping screw. 6,340,277, Cl. 411-416.000.

Koepsel, Roger E.: *See—*
Schott, Carl G.; and Koepsel, Roger E., 6,340,290, Cl. 416-157.00R.

Koestler, James Joseph: *See—*
Narula, Anubhav P. S.; Arruda, Edward; Koestler, James Joseph; and Molner, Ellen Ann, 6,340,666, Cl. 512-25.000.

Koga, Ritsuo; and Kubouchi, Hideto, to Plus Corporation. Lamp cartridge. 6,340,237, Cl. 362-294.000.

Kohán, László: *See—*
Jakab, Csaba; Kohán, László; Scott, Ronald Francis; and Schneider, Jerome John, Jr., 6,340,861, Cl. 313-318.070.

Kohashi, Takashi; Ogino, Akira; Moriwaki, Hisayoshi; Kimura, Yuji; and Ikeda, Nozomu, to Sony Corporation. Method and apparatus for detecting spectrum spread signals. 6,341,141, Cl. 375-137.000.

Köhler, Friedrich; and Lorenz, Pia, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Holding device for computer memory drive carriers. 6,341,059, Cl. 361-685.000.

Kohsaka, Jun: *See—*
Takeshita, Kenji; Kohsaka, Jun; and Nagasaka, Yasushi, 6,341,030, Cl. 359-216.000.

Koike, Fumihito; and Hasegawa, Naoya, to Alps Electric Co., Ltd. Giant magnetoresistive material film, method of producing the same magnetic head using the same. 6,340,520, Cl. 428-332.000.

Koike, Yasuaki; Kawasaki, Takayuki; Nishiwaki, Shigehiro; Matsumoto, Tadashi; and Akita, Hideo, to Nihon Kohoen Corporation; and Kabushikikaisya Kyoma. Biomedical electrode. 6,341,230, Cl. 600-392.000.

Koito Manufacturing Co., Ltd.: *See—*
Yamashita, Masayasu; and Yabuzaki, Jun, 6,340,870, Cl. 315-308.000.

Koiwa, Mitsuru: *See—*
Hamada, Kazuya; Morita, Shingo; Murata, Shigemi; and Koiwa, Mitsuru, 6,340,303, Cl. 439-127.000.

Kojima Press Industry Co., Ltd.: *See—*
Konda, Akihiro; Ito, Kazuo; Aotuka, Kazunori; Itoh, Yuichi; Uchiyama, Akira; and Takehara, Toru, 6,340,531, Cl. 428-516.000.

Kok, Ronaldus Joannes Cornelis Maria, to OTB Group B.V. System for producing optical data carriers. 6,340,296, Cl. 425-162.000.

Kokami, Yasuhiko: *See—*
Seki, Kunio; Tsunoda, Toshiyuki; Kokami, Yasuhiko; and Kawauchi, Kunihiro, 6,340,873, Cl. 318-254.000.

Komiya, Motohiro; and Iida, Hisashi, to Mitsubishi Pencil Kabushiki Kaisha. Writing implement with an ink collector. 6,340,262, Cl. 401-224.000.

Komori, Noboru: *See—*
Usami, Yoshihisa; Shibata, Michihiro; Komori, Noboru; Ishida, Toshio; and Morohashi, Takashi, 6,341,122, Cl. 369-275.400.

Komoto, Satoshi; Nitta, Koichi; Suzuki, Nobuhiro; Konno, Kuniaki; Sugawara, Hideto; and Furukawa, Chisato, to Kabushiki Kaisha Toshiba. Semiconductor light emitting device including a fluorescent material. 6,340,824, Cl. 257-99.000.

Komura, Akiyoshi: *See—*
Kaiho, Masayuki; Mori, Hideaki; Kieda, Shigekazu; Shiobara, Ryoichi; Hattori, Kenichi; and Komura, Akiyoshi, 6,340,853, Cl. 310-61.000.

Kon, Junichi: *See—*
Toya, Tetsuya; Shirakura, Hidetoshi; and Kon, Junichi, 6,340,772, Cl. 564-5.000.

Konda, Akihiro; Ito, Kazuo; Aotuka, Kazunori; Itoh, Yuichi; Uchiyama, Akira; and Takehara, Toru, to Kojima Press Industry Co., Ltd. Interior trim for automobile. 6,340,531, Cl. 428-516.000.

Kondo, Hitoshi: *See—*
Kobori, Takeo; Goto, Tomoko; Kondo, Hitoshi; Tsuboi, Hiroyuki; Iiyama, Mika; Asada, Toru; and Goto, Takashi, 6,340,697, Cl. 514-364.000.

Kondo, Katsumi; Terao, Hiromu; Abe, Hidetoshi; Ohta, Masuyuki; Suzuki, Kenkichi; Sasaki, Tohru; Kawachi, Genshiro; and Ohwada, Junichi, to Hitachi, Ltd. Liquid crystal display device with common electrode arrangement. 6,341,004, Cl. 349-141.000.

Kondo, Masashi: *See—*
Kanbe, Shinobu; Kondo, Masashi; and Nishimura, Motohide, 6,340,511, Cl. 428-36.910.

Kondo, Nobukazu; Kaneko, Seiji; Okazawa, Koichi; Gemma, Hideaki; Mochida, Tetsuya; and Hayashi, Takehisa, to Hitachi, Ltd. Information processing system. 6,341,323, Cl. 710-129.000.

Kondo, Toshihiro: *See—*
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Kondo, Yasuhiro: *See—*
Nishiyama, Noriyoshi; Nakamura, Tomokazu; Ikkai, Yasufumi; Ogushi, Masaki; and Kondo, Yasuhiro, 6,340,857, Cl. 310-156.530.

Kondoh, Koichi: *See—*
Shimizu, Nobuyoshi; Kondoh, Koichi; and Maeno, Chiaki, 6,340,924, Cl. 335-151.000.

Kondratenko, Natalya: *See—*
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Konica Corporation: *See—*
Nakanishi, Kazuhiro; Takano, Kunikazu; Kibayashi, Hiroshi; Nakanishi, Hiromi; Takaba, Tetsufumi; Hiroshima, Wataru; Takeda, Tsuyoshi; Aoki, Akira; and Onda, Kanichi, 6,341,200, Cl. 396-6.000.
Taima, Yasuo, 6,340,562, Cl. 430-599.000.

Toyoizumi, Yoshihiko; and Iino, Chuji, 6,340,036, Cl. 141-275.000.
Ui, Makoto; and Haibara, Fumio, 6,340,984, Cl. 347-139.000.

Konishi, Morikazu, to Sony Corporation. Plane type displaying apparatus. 6,340,962, Cl. 345-75.200.

Konishi, Teruaki: *See*—
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Konishi, Yoshiharu; and Hayama, Hitoshi, to Seiko Epson Corporation. Tape printing method to allow for removal of excess tape in a background environment. 6,340,255, Cl. 400-615.200.

Konno, Kuniaki: *See*—
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Konno, Takao: *See*—
Inoue, Masahiko; Horiuchi, Toshihiko; Momoi, Yasuyuki; Konno, Takao; and Yamagishi, Wataru, 6,341,258, Cl. 702-56.000.

Kono, Hiroyuki: *See*—
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Kontothanassis, Leonidas; Scott, Michael L.; Stets, Robert; Dwarkadas, Sandhya; Hardavellas, Nikos; and Hunt, Galen, to Compaq Computer Corporation. Apparatus and method for maintaining data coherence within a cluster of symmetric multiprocessors. 6,341,339, Cl. 711-148.000.

Konuma, Satoshi: *See*—
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Koochin, Carey Andrew, to Koochin Trucking Ltd. Brake adjustment tool. 6,339,981, Cl. 81-437.000.

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Koochin, Carey Andrew, 6,339,981, Cl. 81-437.000.

Kopetzky, Robert; and Kempfle, Thomas, to Takata (Europe) Vehicle Safety Technology GmbH. Harmonic reduction gear and safety belt apparatus in motor vehicles comprising a harmonic reduction gear of this kind. 6,340,127, Cl. 242-382.200.

Kopytnik, Zbigniew: *See*—
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Korenev, Sergey Alexandrovich; Masefield, John; and Kriebel, Jerry, to Steris INC. Method of radiation treatment for fluoropolymer materials. 6,340,718, Cl. 522-156.000.

Kornberg, Brian Edward; Nikam, Sham Shridhar; and Rafferty, Michael Francis, to Warner-Lambert Company. Conformationally semi-constrained quinoxaline 2,3-diones as neuroprotective agents. 6,340,758, Cl. 544-337.000.

Korobov, Vladimir; Grossman, Miriam; and Rockman, Sylvie, to Tower Semiconductor Ltd. Method of fabricating a capacitor. 6,340,620, Cl. 438-396.000.

Korth, Henry F.: *See*—
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Kortmann, Karl. Concrete block, in particular for paving a petrol station or the like. 6,340,267, Cl. 404-2.000.

Koshido, Yoshihiro: *See*—
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Kotowski, John A.: *See*—
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Kotschner, Josef; and Kotschner, Ralph-Paul. Carpenter hammer. 6,339,974, Cl. 81-24.000.

Kotschner, Ralph-Paul: *See*—
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Kourogi, Motonobu: *See*—
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Kowa Co., Ltd.: *See*—
Ishiwata, Hiroyuki; Kabeya, Mototsugu; Shigyo, Hiromichi; Shiratsuchi, Masami; Hattori, Yukio; Nakao, Hiroshi; Nagoya, Takao; Sato, Seiichi; Oda, Soichi; Suda, Makoto; and Shibasaki, Manabu, 6,340,682, Cl. 514-235.800.

Koyama, Akihiro; Kishimoto, Shoichi; Kurachi, Junji; and Yamamoto, Nobuyuki, to Nippon Sheet Glass Co., Ltd. Glass composition and substrate for information recording media comprising the same. 6,340,647, Cl. 501-69.000.

Koyota, Hideaki: *See*—
Nara, Akira; and Koyota, Hideaki, 6,340,883, Cl. 324-76.780.

Kozawa, Masami: *See*—
Hashiba, Isao; Kozawa, Masami; and Seto, Kiyotomo, 6,340,762, Cl. 546-245.000.

Kozuki, Haruya: *See*—
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Kraft, Eberhard: *See*—
Wild, Hans-Peter; and Kraft, Eberhard, 6,340,130, Cl. 242-420.600.
Wild, Hans-Peter; and Kraft, Eberhard, 6,340,343, Cl. 493-10.000.

Kraft, Walter, to Gretag Imaging AG. Photographic copier. 6,341,008, Cl. 355-67.000.

Kramer, Jesse J.: *See*—
Smith, Carl R.; Madura, Jeffrey R.; and Kramer, Jesse J., 6,340,796, Cl. 174-255.000.

Kramer, Mark E.; and Veldman, Roger L., to Donnelly Corporation. Memory mirror system for vehicles. 6,340,849, Cl. 307-10.100.

Kraus, Ingrid: *See*—
Millhoff, Juergen; Gassenmeier, Thomas; Liphard, Maria; Artiga González, Rene-Andres; Hammerstein, Stefan; and Kraus, Ingrid, 6,340,662, Cl. 510-417.000.

Kraus, Karl H.; and Wotton, Harold M., III. External fixator clamp and system. 6,340,361, Cl. 606-59.000.

Krauss, Richard C.; Strom, Robert M.; Scortichini, Carey L.; Kruper, William J.; Wolf, Richard A.; Wu, Weishi W.; Carr, Albert A.; Hay, David A.; Rudisill, Duane E.; and Panzone, Gianbattista, to Merrell Pharmaceuticals Inc. Intermediates useful for the preparation of antihistaminic piperidine derivatives. 6,340,761, Cl. 546-239.000.

Kremsreiter, Walter: *See*—
Hauser, Manfred; Alaze, Norbert; Merklein, Dieter; Schuller, Wolfgang; Bayrhof, Julius; Kremsreiter, Walter; Evertz, Joachim; Zielke, Joerg; Zitzelsberger, Ralf; Weh, Andreas; Allenzon, Bernd; and Hellebrandt, Michael, 6,340,295, Cl. 417-470.000.

Kresge, John S.: *See*—
Johnson, Eric A.; and Kresge, John S., 6,341,071, Cl. 361-767.000.

Kreuter, Matthias H.; and Steiner, Rudolf, to Emil Flachsmann AG. Stable, homogeneous, extract free or nearly free form secondary reaction products. 6,340,479, Cl. 424-725.000.

Kriebel, Jerry: *See*—
Korenev, Sergey Alexandrovich; Masefield, John; and Kriebel, Jerry, 6,340,718, Cl. 522-156.000.

Krishnan, Sivaraj Sivarama: *See*—
Bourne, David Allan; Williams, Duane Thomas; Kim, Kyoung Hung; Krishnan, Sivaraj Sivarama; and Hazama, Kensuke, 6,341,243, Cl. 700-165.000.

Krishnan, Sriram; Holley, Gregory L.; Gardner, Edward A.; and Maslak, Samuel H., to Acuson Corporation. Contrast agent imaging with destruction pulses in diagnostic medical ultrasound. 6,340,348, Cl. 600-447.000.

Krivokapic, Zoran, to Advanced Micro Devices, Inc. Reactor and method for ionized metal deposition. 6,340,417, Cl. 204-192.170.

Kronenthal, David R.; Denzel, Theodor; Chen, Bang-Chi; Simpson, James H.; and Deshpande, Rajendra P., to Bristol-Myers Squibb Co. Deprotection and recrystallization processes. 6,340,752, Cl. 540-490.000.

Kroon, Tord: *See*—
Lehman, Anders; Svensson, Erik; Kroon, Tord; and Eriksson, Jan-Erik, 6,340,049, Cl. 164-471.000.

Krueger, Brett R.: *See*—
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Kruper, William J.: *See*—
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Krywanczyk, Timothy C.: *See*—
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KS Gleitlager GmbH: *See*—
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Kubby, Joel A.: *See*—
Peeters, Eric; Noolandi, Jaan; Apte, Raj B.; Floyd, Philip D.; Small, Jonathan A.; Kovacs, Gregory J.; Lean, Meng H.; Volkel, Armin R.; Bolte, Steven B.; Shi, An-Chang; Endicott, Frederick J.; Anderson, Gregory B.; Hays, Dan A.; Kubby, Joel A.; Jackson, Warren B.; Moffat, Karen A.; McAneney, T. Brian; Veregin, Richard P. N.; McDougall, Maria N. V.; Boils, Danielle C.; and Szabo, Paul D., 6,340,216, Cl. 347-21.000.

Kubo, Masumi: *See*—
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Kubota, Atsuhiko: *See*—
Ueno, Kohshi; Sasaki, Atsushi; Kawano, Koki; Okabe, Tadashi; Kitazawa, Noritaka; Takahashi, Keiko; Yamamoto, Noboru; Suzuki, Yuichi; Matsunaga, Manabu; and Kubota, Atsuhiko, 6,340,759, Cl. 544-358.000.

Kubota, Kenichi; and Chiba, Noriaki, to Mikuni Adec Corporation. Diaphragm type fuel pump. 6,340,294, Cl. 417-395.000.

Kubota, Makoto: *See*—
Hasebe, Yuu; Shimasaki, Hirato; Kubota, Makoto; Mikame, Daisuke; and Imamoto, Yasunori, 6,340,337, Cl. 473-349.000.

Kubota, Shuichi: *See*—
Okawa, Koji; Kashiwazaki, Takao; Kubota, Shuichi; Endo, Tadashi; Tanino, Masato; and Kabeshita, Akira, 6,340,132, Cl. 242-566.000.

Kubota, Toshio; Sugawara, Masumi; Horinaka, Takehiro; and Kimura, Fujimi, to TDK Corporation. Polishing method and fabrication method of thin film magnetic head. 6,340,558, Cl. 430-320.000.

Kubouchi, Hideto: *See*—
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Kuehl, Edward Morris: *See*—
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Kuhara, Yoshiki; Nakanishi, Hiromi; and Terauchi, Hitoshi, to Sumitomo Electric Industries, Ltd. Photodiode and photodiode module. 6,340,831, Cl. 257-461.000.

Kuhn, Roland; and Junqua, Jean-Claude, to Matsushita Electric Industrial Co., Ltd. Adaptation system and method for E-commerce and V-commerce applications. 6,341,264, Cl. 704-255.000.

Kuittinen, Tero: *See*—
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KUKA Development Laboratories, Inc.: *See*—
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Kumagai, Toshio; and Aruga, Yoshiharu, to Seiko Epson Corporation. Ink jet recording apparatus. 6,340,219, Cl. 347-33.000.

Kumar, Sudarshan; Madhyastha, Sadhana; Mehta, Gaurav G.; and Lan, Jiann-Cherng James, to Intel Corporation. Reducing power consumption in a data storage device. 6,341,099, Cl. 365-227.000.

Kung, Sun-Yuan: *See*—
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Kunieda, Toshiaki: *See*—
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Kunikiyo, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 6,341,087, Cl. 365-189.090.

Kunin, Robert; Yarnell, Peter A.; and Pennisi, Nichole L., to Graver Technologies, Inc. Non-chloride containing regenerant composition for a strong acid cation exchange resin of a water softener. 6,340,712, Cl. 521-26.000.

Kuntz, Alan R.: *See*—
Hsieh, Bing R.; Yu, Yuan; Fuller, Timothy J.; Yanus, John F.; Pai, Damodar M.; Rommelmann, Heiko; Thompson, Allen J.; Stanton, Donald S.; Schlafer, Michelle L.; Kuntz, Alan R.; Kazakos, Ann M.; Wayman, William H.; and Hart, Steven C., 6,340,528, Cl. 428-412.000.

Kuo, Chung-Hsien, to Chaw Khong Technology Co., Ltd. Multi-step positioning device of trunk pull rod. 6,339,863, Cl. 16-113.100.

Kuo, Wei-chen: *See*—
Chuang, Te-tsai; Kuo, Wei-chen; Lin, Kuo-cheng; and Huang, Wen-shi, 6,340,292, Cl. 416-244.00R.

Kuo, Yu-Jen, to Hon Hai Precision Ind. Co., Ltd. Electrical adapter. 6,340,314, Cl. 439-638.000.

Kurachi, Junji: *See*—
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Kurihara, Akira: *See*—
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Kurihara, Hideshi; Takao, Seiichi; Miyajima, Kazumoto; Yamamoto, Shinya; and Takase, Toru, to Teijin Limited. Fine particle/polyester slurry melt-kneaded in extruder with polyester. 6,340,443, Cl. 264-464.000.

Kurihara, Hiroshi: *See*—
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Kurihara, Kazumichi: *See*—
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Kurimoto, Akira: *See*—
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Kurimoto, Isao; Hirata, Norihiko; Nakamura, Akihiko; and Aratake, Yuichiro, to Sumitomo Chemical Co., Ltd.; and Shionogi & Co., Ltd. Producing Z-isomer of hydrogen bromide salt of 2-aminothiazole derivative. 6,340,763, Cl. 548-194.000.

Kuroda, Katsuhito; Ishihara, Jinsei; and Kato, Hideyuki, to Murata Manufacturing Co., Ltd. Dielectric filter, dielectric duplexer, and communication apparatus using the same. 6,340,921, Cl. 333-134.000.

Kurosawa, Yuichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Film scanner. 6,341,010, Cl. 355-75.000.

Kuroyanagi, Isao: *See*—
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Kurumatani, Hajimu; Matsuda, Susumu; and Kainoh, Mie, to Toray Industries, Inc. Protective agent for nervous system structural cells. 6,340,693, Cl. 514-337.000.

Kurumatani, Hiroyuki: *See*—
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Kusano, Hidetoshi: *See*—
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Kuzmich, Alan Paul. Security device for sliding doors and windows. 6,340,184, Cl. 292-259.00R.

Kuzniar, Daniel E.; and Harris, Jason P., Sr., to Marconi Medical Systems, Inc. Pulse detection system for X-ray tubes. 6,341,155, Cl. 378-94.000.

Kuznicki, Steven M.; Jacubinas, Richard M.; Curran, Jacqueline S.; and Bell, Valerie A., to Engelhard Corporation. Water purification using titanium silicate membranes. 6,340,433, Cl. 210-651.000.

Kvaerner Metals: *See*—
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Kvaerner Process Systems A.S.: *See*—
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Kwack, Tae Hoon: *See*—
Murray, Rex E.; Mawson, Simon; Szul, John F.; Erickson, Kersten Anne; Kwack, Tae Hoon; Karol, Frederick J.; and Schreck, David James, 6,340,730, Cl. 526-114.000.

Kwant, John W., Jr.: *See*—
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Kwok, Hoi-Sing, to Varintelligent (BVI) Limited; and Johnson, Terence Leslie. Reflective active matrix liquid crystal displays with mixed twisted nematic and birefringent modes. 6,341,001, Cl. 349-96.000.

Kwon, Chung Hwan: *See*—
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Kwon, Sung Lark: *See*—
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Kwon, Young-Ee; Whang, Kyu Ja; and Kim, Won Kyu, to Sook Myung Women's University; and STC Nara Co., Ltd. Platinum (IV) complex used as anti-cancer agent and preparing method thereof. 6,340,770, Cl. 556-137.000.

Kyodo Printing Co., Ltd.: *See*—
Murai, Tatsuhiko; and Furukawa, Tadahiro, 6,340,545, Cl. 430-7.000.

Kyoh, Suigen: *See*—
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Kyuragi, Hakaru: *See*—
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LaBarge, Inc.: *See*—
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Labrot, Michael: *See*—
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Ladd, John W., to Micron Technology, Inc. Apparatus for establishing an electrical connection with a wafer to facilitate wafer-level burn-in and methods. 6,340,302, Cl. 439-40.000.

Laermer, Franz: *See*—
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Lagrange, Alain: *See*—
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Lagwinska, Elizabeth M.: *See*—
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Lahaye, Reni Louis Jean: *See*—
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L' Air Liquide: *See*—
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L' Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
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Lake, Kristen Leanne: *See*—
Romeo, Derek Joseph; Lake, Kristen Leanne; and Peters, Charles J., 6,340,091, Cl. 211-59.200.

Lakshman, Tirunell V.; and Stiliadis, Dimitrios, to Lucent Technologies, Inc. Packet classification method and apparatus employing two fields. 6,341,130, Cl. 370-389.000.

Laligant, Pascal: *See*—
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Lam Research Corporation: *See*—
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Lambert, Malcolm David Dick, to Delphi Technologies, Inc. Fuel injector. 6,340,121, Cl. 239-533.400.

Lamont, John Victor: *See*—
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Lan, Jiann-Cherng James: *See*—
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Lane, Donald R.; Melendez, Jose A.; Munteanu, Violeta F.; and Kinney, Frederick D., to Tomahawk, Inc. Corrosion inhibiting admixture for concrete. 6,340,438, Cl. 252-387.000.

Lane, John: *See*—
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Lane, Steven O.; and McCleary, James C., to Hughes Electronics Corporation. Multiple beam phased array with aperture partitioning. 6,340,949, Cl. 342-373.000.

Langlet, Abraham: *See*—
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Lannan, Stephen Mark, to Dana Corporation. Grease dam for filling a wheel hub cavity with grease and method of using same. 6,340,072, Cl. 184-5.100.

Lanterman, H. Bryan: *See*—
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Lapidot, Dror, to Decell, Inc. Apparatus and methods for providing route guidance to vehicles. 6,341,255, Cl. 701-209.000.

Large Scale Proteomics Corp.: *See*—
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Larson, John T.: *See*—
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Larson, Ralph I., to Heat Technology, Inc. Method for removing heat from an integrated circuit. 6,339,875, Cl. 29-841.000.

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Lord Corporation: *See*—
Abbey, Kirk J.; Gomez, Fernando J.; and Wagener, Kenneth B., 6,340,731, Cl. 526-241.000.
Carlson, J. David, 6,340,080, Cl. 188-267.200.

L' Oreal: *See*—
Gueret, Jean-Louis H., 6,340,258, Cl. 401-87.000.

L' Oreal S.A.: *See*—
Genet, Alain; and Lagrange, Alain, 6,340,371, Cl. 8-406.000.
Vidal, Laurent; and Malle, Gérard, 6,340,372, Cl. 8-409.000.

Lorenz, Pia: *See*—
Köhler, Friedrich; and Lorenz, Pia, 6,341,059, Cl. 361-685.000.

Losano, Fiorello: *See*—
Malatto, Dante Rodolfo; Losano, Fiorello; Occella, Sergio; and Patrone, Vladimiro, 6,340,006, Cl. 123-41.290.

Lou, Jianfeng: *See*—
Bonardi, Christian; Hebrard, Pierre; Peres, Richard; Malone, Kenneth; Nosowitz, Martin; Mendolia, Michael; Callais, Peter; Stainbrook, Barbara; and Lou, Jianfeng, 6,340,729, Cl. 526-83.000.

Loughry, Gregory Joseph: *See*—
Nelson, Ronald H.; Milovich, Dimitrije; Clark, Paul Nordstrom; and Loughry, Gregory Joseph, 6,340,509, Cl. 428-34.700.

Louie-Helm, Jenny: *See*—
Shell, John W.; Louie-Helm, Jenny; and Markey, Micheline, 6,340,475, Cl. 424-469.000.

Louwet, Frank: *See*—
Cloots, Tom; Van den Bogaert, Roger; Tahon, Jean-Pierre; and Louwet, Frank, 6,340,496, Cl. 427-58.000.

Lovett, Jeffery Alan: *See*—
Hung, Stephen Lan-Sun; Lovett, Jeffery Alan; Beebe, Kenneth Winston; Cutrone, Martin Bernard; and Correa, Sanjay Marc, 6,339,925, Cl. 60-39.060.

Lowery, Robert A.: *See*—
Johnson, Mitchell D.; Klein, Michael A.; Parks, Matthew David; Karl, Mark Thomas; Johnson, Patrick; Spahr, Tim; Sajna, Jeff; Andrews, Craig; Higgins, Kenneth Terry; Lowery, Robert A.; Ruby, Keith D.; Mitchell, Alton; and Davis, Rhonda L., 6,340,186, Cl. 293-120.000.

Lowman, Andrew E.: *See*—
Greivenkamp, John E., Jr.; and Lowman, Andrew E., 6,341,181, Cl. 382-260.000.

LSI Logic Corporation: *See*—
Agrawal, Ghasi R., 6,341,092, Cl. 365-201.000.
Allman, Derryl D. J.; and Bystedt, Brian, 6,341,056, Cl. 361-312.000.
Auracher, Stefan, 6,341,094, Cl. 365-201.000.
Basel, Peter L., 6,341,166, Cl. 381-103.000.
Caldwell, Barry, 6,340,795, Cl. 174-117.0FF.
Caulk, Robert L., Jr.; Magoshi, Hidetaka; and Daberkow, Kevin L., 6,341,324, Cl. 710-260.000.
Downing, Kevin A., 6,341,367, Cl. 716-16.000.
Ducaroir, Francois; Nakamura, Karl S.; and Jenkins, Michael O., 6,341,142, Cl. 375-219.000.
Hagan, Stephen C., 6,341,301, Cl. 709-100.000.
Mendenhall, Todd C.; and Gouzu, Manabu, 6,341,198, Cl. 386-98.000.
Mizuno, Hiroshi; Kinoshita, Osamu; Murohashi, Tetsuaki; Ueno, Akihisa; Sakuma, Yoshifumi; and Amberiadis, Kostas, 6,340,434, Cl. 216-38.000.
Rutherford, Mark D.; and Rogers, Arthur G., 6,341,355, Cl. 713-501.000.
Schultz, Richard T., 6,340,905, Cl. 327-161.000.
Watkins, Daniel, 6,341,375, Cl. 725-100.000.

Lu, Charng-Shing: *See*—
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Lubrizol Corporation, The: *See*—
Kocsis, Jody A.; Blystone, Sheri L.; Bardasz, Ewa A.; and DeTar, Marvin B., 6,340,659, Cl. 508-518.000.

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Lucent Technologies, Bell Laboratories: *See*—
Gbur, Uwe; Dietz, Martin; Brandenburg, Karlheinz; Gerhauser, Heinz; Herre, Jürgen; and Quackenbush, Schuyler, 6,341,165, Cl. 381-23.000.

Lucent Technologies Inc.: *See*—
Blott, Stephen Michael; and Korth, Henry F., 6,341,285, Cl. 707-8.000.
Heer, Daniel Nelson, 6,341,328, Cl. 711-112.000.
Lakshman, Tirunell V.; and Stiliadis, Dimitrios, 6,341,130, Cl. 370-389.000.

Lucnet Technologies Inc.: *See*—
Johnson, Robert E.; and Vella-Coleiro, George P., 6,341,146, Cl. 375-329.000.

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Burroughs, Tracy Kim; Lee, Wilson Douglas; and Luebbe, Susan Carol, 6,341,289, Cl. 707-104.000.

Lueder, Thomas; Scholinakis, Konstantinos; Gutsche, Bernhard; Hensen, Hermann; and Seipel, Werner, to Henkel Kommanditgesellschaft auf Aktien. Method for producing neutral sugar surfactant granulates. 6,340,665, Cl. 510-470.000.

Lui, Philip; and Kopytnik, Zbigniew. System and method for dynamic assistance in software applications using behavior and host application models. 6,340,977, Cl. 345-709.000.

Lum, Lambert Chun-Bob; Seidel, Craig; Guan, Zhengo (Mark); and Schwarz, James K., Jr., to Electronics for Imaging, Inc. Interface code architecture. 6,341,307, Cl. 709-220.000.

Lumpkin, Wayne R.; and Mayberry, Michael T., to Avid LLC. Pad wear compensator for a disc brake caliper. 6,340,074, Cl. 188-26.000.

Luna Innovations, Inc.: *See*—
Elster, Jennifer L.; Davis, Richey M.; and Jones, Mark E., 6,341,185, Cl. 385-12.000.

Lund, Gary K.: *See*—
Hughes, Craig D.; Doll, Daniel W.; Lund, Gary K.; and Lester, Dean M., 6,340,175, Cl. 280-741.000.

Lund, Jan P.: *See*—
Dvorak, Charles A.; Wren, Douglas L.; Fisher, Lawrence E.; Axt, Steven D.; Humphreys, Eric R.; Arzeno, Humberto B.; Beard, Colin C.; Nguyen, Sam Linh; Han, Yeun-Kwei; Roberts, Christopher R.; Lund, Jan P.; and Fatheree, Paul R., 6,340,756, Cl. 544-276.000.

Lundberg, Steven J.: *See*—
Sharpe, Scott A.; Lundberg, Steven J.; and Bejcek, William E., 6,341,282, Cl. 707-3.000.

Luongo, Joseph S., to Advanced Construction Materials Corp. Strengthened, light weight wallboard and method and apparatus for making the same. 6,340,388, Cl. 106-675.000.

Luria, David, to Fuselage Engineering Service, Ltd. Compact storing and retrieving apparatus particularly useful for aircraft. 6,340,136, Cl. 244-118.100.

Lushchikov, Vladislav I.: *See*—
Ivanov, Alexander I.; Lushchikov, Vladislav I.; Shabalin, Eugeny P.; Maznyy, Nikita G.; Khvastunov, Michael M.; and Rowland, Mark, 6,341,150, Cl. 376-159.000.

Lyles, Mark B.; McLaughlin, Charles A.; Halff, Glenn A.; and Mallow, William A., to MED USA. System for cell growth. 6,340,360, Cl. 604-890.100.

Lynch, Martin James: *See*—
Wolf, Ronald J.; and Lynch, Martin James, 6,340,884, Cl. 324-207.210.

Lynch, Robert D.: *See*—
Wheatley, Brian K.; Martin, James D.; and Lynch, Robert D., 6,340,401, Cl. 149-109.600.

Lys, Ihor; Mueller, George G.; Morgan, Frederick Marshall; and Blackwell, Michael K., to Color Kinetics Incorporated. Illumination components. 6,340,868, Cl. 315-185.00S.

Lytle, Craig S.; and Faria, Donald F., to Altera Corporation. Programmable logic array integrated circuit with general-purpose memory configurable as a random access or FIFO memory. 6,340,897, Cl. 326-40.000.

Ma, Manny Kin F.: *See*—
Martin, Chris G.; and Ma, Manny Kin F., 6,340,896, Cl. 324-755.000.

Mabi s-Zeno, by Linda, executrix: *See*—
Goodman, Mark A; Bishop, William; Zeno, John R., deceased; and Mabbs-Zeno, by Linda, executrix, 6,339,961, Cl. 73-593.000.

MacDougal, Michael H.: *See*—
Peters, Frank; and MacDougal, Michael H., 6,341,138, Cl. 372-96.000.

Machida, Katsuyuki: *See*—
Muraguchi, Ryo; Nakashima, Akira; Tonai, Atsushi; Kimatsu, Michio; Machida, Katsuyuki; Kyuragi, Hakaru; and Imai, Kazuo, 6,340,641, Cl. 438-763.000.

Macias, William Louis, to Eli Lilly and Company. $SPLA_2$ inhibitor compounds for treatment of disease. 6,340,699, Cl. 514-419.000.

Mackenzie, Patricia Denise: *See*—
Salvo, Joseph James; Mackenzie, Patricia Denise; Bennett, Janet Sue; Relyea, Heather Ann; and Morelli, Thomas Anthony, II, 6,341,271, Cl. 705-28.000.

Mackinlay, Jock D.: *See*—
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Macklin, Michael B.: *See*—
Burke, Sean; Macklin, Michael B.; Rieder, Klaus-Alexander; and Trottier, Jean-François, 6,340,522, Cl. 428-359.000.

MacNicol, Roger Dermot; Kirk, Steven A.; Bello, Randall George; Rao, Jun; and Yang, Katherine Tsouya, to Sybase, Inc. Database system with methods for optimizing performance of correlated subqueries by reusing invariant results of operator tree. 6,341,281, Cl. 707-3.000.

Macrotech Polyseal, Inc.: *See*—
Zitting, Gordon T.; and Hagen, Todd, 6,340,161, Cl. 277-459.000.

Madhyastha, Sadhana: *See*—
Kumar, Sudarshan; Madhyastha, Sadhana; Mehta, Gaurav G.; and Lan, Jiann-Cherng James, 6,341,099, Cl. 365-227.000.

Madsen, Jeffrey C.; and Downing, Steven P., to Hewlett-Packard Company. Sliding valve vacuum holddown method apparatus. 6,340,155, Cl. 271-183.000.

Madura, Jeffrey R.: *See*—
Smith, Carl R.; Madura, Jeffrey R.; and Kramer, Jesse J., 6,340,796, Cl. 174-255.000.

Maeda, Mitsuyo: *See*—
Tanaka, Ichiro; Yashiki, Hiroyoshi; Maeda, Mitsuyo; Nakayama, Taisei; Honjou, Noriyuki; and Mita, Shinsuke, 6,340,399, Cl. 148-308.000.

Maeda, Takeshi: *See*—
Furuhashi, Tsutomu; Konuma, Satoshi; Mori, Tatsumi; Kurihara, Hiroshi; Nishitani, Shigeyuki; Mori, Masashi; and Maeda, Takeshi, 6,340,970, Cl. 345-213.000.

Maeda, Toshiaki: *See*—
Hachisuka, Nozomu; Maeda, Toshiaki; and Inage, Kenji, 6,340,885, Cl. 324-210.000.

Maeda, Yuji, to Yazaki Corporation. On-vehicle distribution box and distribution system. 6,340,848, Cl. 307-10.100.

Maegawa, Shigeto: *See*—
Hirano, Yuuichi; Yamaguchi, Yasuo; and Maegawa, Shigeto, 6,340,829, Cl. 257-347.000.

Maehata, Hideo; Matsumura, Yasuo; Yoshizawa, Hisae; and Suwabe, Masaaki, to Fuji Xerox Co., Ltd. Toner for the development of electrostatic image, process for the preparation thereof, developer for the development of electrostatic image and process for the formation of image. 6,340,549, Cl. 430-111.400.

Maekawa, Tomoya: *See*—
Teraoka, Toshihiro; Ishizaki, Toshio; Ogawa, Koichi; and Maekawa, Tomoya, 6,340,953, Cl. 343-776.000.

Maemoto, Kazuo: *See*—
Kawamura, Koichi; Maemoto, Kazuo; Yamasaki, Sumiaki; Sorori, Tadahiro; Tashiro, Hiroshi; and Fukino, Kiyotaka, 6,340,554, Cl. 430-270.100.

Maeno, Chiaki: *See*—
Shimizu, Nobuyoshi; Kondoh, Koichi; and Maeno, Chiaki, 6,340,924, Cl. 335-151.000.

Maesoba, Kazuki; Naka, Yoshio; and Sugiyama, Masaru, to Denso Corporation. Method of manufacturing rotary electric machine's stator. 6,339,871, Cl. 29-596.000.

Magnecomp Corporation: *See*—
Coon, Warren, 6,341,050, Cl. 360-244.900.

Magneti Marelli S.p.A.: *See*—
Di Lieto, Nicola; Burgio, Gilberto; and Flora, Roberto, 6,340,007, Cl. 123-90.110.

Magoshi, Hidetaka: *See*—
Caulk, Robert L., Jr.; Magoshi, Hidetaka; and Daberkow, Kevin L., 6,341,324, Cl. 710-260.000.

Mahadevan, Rajagopalan: *See*—
Tirumalai, Partha Pal; and Mahadevan, Rajagopalan, 6,341,370, Cl. 717-5.000.

Mahalingam, Mallikarjunan: *See*—
Liu, Ji-hwan; Nguyen, Ken; Johnson, Karl S.; and Mahalingam, Mallikarjunan, 6,341,322, Cl. 710-129.000.

Mahmood, Waqar; Bao, Jun; and Csipkes, Andrei, to Ciena Corporation. System for controlling a process for interconnection of optical fibers including fuzzy logic control and optimization architecture. 6,341,242, Cl. 700-117.000.

Mahmoudian, Mahmoud: *See*—
Dawson, Michael John; Mahmoudian, Mahmoud; and Wallis, Christopher John, 6,340,587, Cl. 435-280.000.

Maiden, Janice R.: *See*—
Hess, Joseph P.; Maiden, Janice R.; and Bitwinski, Joan, 6,340,510, Cl. 428-36.100.

Majer, Sigmar; Schuler, Bernhard, deceased (by Ursula Schuler, legal representative); Wiedenhöfer, Kurt; Morita, Toshiaki; and Kitahara, Kenji, to Groz-Beckert KG; and Shima Seiki Manufacturing Ltd. Compound needle with asymmetrically divided closing element. 6,339,942, Cl. 66-120.000.

Majima, Yoshihide: *See*—
Hironaka, Hisakazu; Shimizu, Toshiharu; Majima, Yoshihide; Itoh, Toshimitsu; and Touji, Hidetsugu, 6,341,045, Cl. 360-48.000.

Maki, Jukka: *See*—
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Maki, Kunio: *See*—
Kawata, Hideaki; Ishii, Kei; Hayashi, Koichiro; Aoki, Yoshimasa; Ehira, Atsushi; Maki, Kunio; and Toriumi, Masaki, 6,340,377, Cl. 75-236.000.

Maki, Tadashi: *See*—
Yamaguchi, Hideo; Maki, Tadashi; and Aso, Junya, 6,341,104, Cl. 369-44.150.

Maki, Yuji: *See*—
Handa, Akio; Maki, Yuji; Suzuki, Shoji; Amaki, Kiyoshi; and Sato, Junichi, 6,340,210, Cl. 301-64.400.

Makihara, Masamichi; Kuroyanagi, Isao; Nagasawa, Toshiya; and Torigoe, Eiichi, to Denso Corporation. Refrigerant evaporator. 6,339,937, Cl. 62-503.000.

Making Everlasting Memories, Ltd.: *See*—
Mindrum, Gordon Scott, 6,340,978, Cl. 345-764.000.

Malatto, Dante Rodolfo; Losano, Fiorello; Occella, Sergio; and Patrone, Vladimiro, to C.R.F. Societa Consortile per Azioni. Internal combustion engines having separated cooling circuits for the cylinder head and the engine block. 6,340,006, Cl. 123-41.290.

Malone, Michael. Method and apparatus for measuring three-dimensional shape of object. 6,341,016, Cl. 356-603.000.

Malle, Gérard: *See*—
Vidal, Laurent; and Malle, Gérard, 6,340,372, Cl. 8-409.000.

Mallow, William A.: *See*—
Lyles, Mark B.; McLaughlin, Charles A.; Halff, Glenn A.; and Mallow, William A., 6,340,360, Cl. 604-890.100.

Malm, Howard Leigh: *See*—
Keast, Leslie Allan; and Malm, Howard Leigh, 6,340,005, Cl. 123-27.0GE.

Malmborg, Eric William: *See*—
Owen, William D.; Baumgarten, Robert; Malmborg, Eric William; Palazzini, Christopher; and Palko, Frank E., 6,339,878, Cl. 29-889.100.

Malone, Kenneth: *See*—
Bonardi, Christian; Hebrard, Pierre; Peres, Richard; Malone, Kenneth; Nosowitz, Martin; Mendolia, Michael; Callais, Peter; Stainbrook, Barbara; and Lou, Jianfeng, 6,340,729, Cl. 526-83.000.

Mamiya, Atsushi: *See*—

Fujiwara, Nobuhiro; and Mamiya, Atsushi, 6,340,067, Cl. 180-206.000.

Mancilla, Edward; and Lagwinska, Elizabeth M., to Sherwood Services AG. Process for the production of an anticoagulant composition. 6,340,675, Cl. 514-56.000.

Mankovitz, Roy J.; and Yuen, Henry C., to E-Guide, Inc. Apparatus and methods for a television on-screen guide. 6,341,195, Cl. 386-83.000.

Mannesmann VDO AG: *See*—
Blex, Waldemar, 6,339,970, Cl. 74-492.000.
Stotz, Oliver, 6,340,791, Cl. 174-52.100.
Zapp, Thomas, 6,340,093, Cl. 220-86.100.

Mannhart, Peter, to Oerlikon Contraves AG. Ammunition-feeding device for a cannon. 6,339,983, Cl. 89-33.160.

Manning, Monte: *See*—
Rolfson, J. Brett; and Manning, Monte, 6,340,834, Cl. 257-538.000.
Rolfson, J. Brett; and Manning, Monte, 6,340,835, Cl. 257-538.000.

Manning, Troy A., to Micron Technology, Inc. Method and apparatus for generating an internal clock signal that is synchronized to an external clock signal. 6,340,904, Cl. 327-156.000.

Mannino, Raphael James: *See*—
Margolis, David; Gould-Fogerite, Susan; and Mannino, Raphael James, 6,340,591, Cl. 435-320.100.

Marache, Pierre: *See*—
Minkkinen, Ari; Le Gal, Jean-Hervé; and Marache, Pierre, 6,340,429, Cl. 208-87.000.

Marais, Guy Joel Christian: *See*—
Ghisalba, Oreste; Marais, Guy Joel Christian; and Martin, Pierre, 6,340,754, Cl. 544-244.000.

Marcellin, Alain: *See*—
Villiere, Franck; and Marcellin, Alain, 6,340,187, Cl. 293-155.000.

Marchesini-Huber, Barbara: *See*—
Elli, Marina; Zink, Ralf; Marchesini-Huber, Barbara; and Reniero, Roberto, 6,340,585, Cl. 435-252.900.

Marck, Guy: *See*—
Buchecker, Richard; Marck, Guy; and Muller, Olivier, 6,340,506, Cl. 428-1.260.

Marconcini, Franco: *See*—
Doganata, Yurdaer Nezihi; Marconcini, Franco; Mourad, Magda Mahmoud; Munson, Jonathan P.; Pacifici, Giovanni; and Tantawi, Asser Nasreldin, 6,341,314, Cl. 709-229.000.

Marconi Medical Systems, Inc.: *See*—
Kuzniar, Daniel E.; and Harris, Jason P., Sr., 6,341,155, Cl. 378-94.000.

Mares, Frank: *See*—
Tang, Weiming; Mares, Frank; and Morgan, Robert Clark, 6,340,524, Cl. 428-364.000.

Maresh, Joseph D.: *See*—
Stearns, Kenneth W.; and Maresh, Joseph D., 6,340,340, Cl. 482-52.000.

Margolis, David; Gould-Fogerite, Susan; and Mannino, Raphael James, to University of Maryland; and University of Medicine and Dentistry of New Jersey. Integrative protein-DNA cochleate formulations and methods for transforming cells. 6,340,591, Cl. 435-320.100.

Margosian, Paul M.: *See*—
Liu, Kecheng; Lin, Jian; and Margosian, Paul M., 6,340,887, Cl. 324-309.000.

Margulis, Neal; and Fogg, Chad, to Pixonics, LLC. System and method for using temporal gamma and reverse super-resolution to process images for use in digital display systems. 6,340,994, Cl. 348-625.000.

Markandey, Vishal, to Texas Instruments Incorporated. Automatic detection of letterbox and subtitles in video. 6,340,992, Cl. 348-556.000.

Markey, Micheline: *See*—
Shell, John W.; Louie-Helm, Jenny; and Markey, Micheline, 6,340,475, Cl. 424-469.000.

Markham, Trevor K.: *See*—
Arnott, Glen M.; and Markham, Trevor K., 6,340,034, Cl. 137-883.000.

Marquardt, Kevin L.: *See*—
Mercer, Merl; Marquardt, Kevin L.; and Crum, Jesse D., 6,340,512, Cl. 428-42.200.

Marquis, James A.: *See*—
Miller, Robert E.; Marquis, James A.; and Davis, Paul K., 6,339,945, Cl. 72-49.000.

Marsden, Jonathan; and Samadani, Ramin, to Electronics for Imaging, Inc. Gamut correction with color separation and methods and apparatuses for performing same. 6,340,975, Cl. 345-590.000.

Marshall, James W.; Martin, James A.; and Leimbach, Wendell B., to AME Group, Incorporated. Lawn and garden tool. 6,340,061, Cl. 172-41.000.

Marshall, Malcolm George: *See*—
Lee, Ching-Chin; Burg, Gary Robert; Looman, Ernest Wilford, Jr.; Turner, Bruce Joseph; and Marshall, Malcolm George, 6,340,123, Cl. 239-552.000.

Martek Biosciences Corporation: *See*—
Anderson, Frank Elbert, III; Brown, Jonathan Miles; Coughlin, Philip Edward; Homans, Steven William; Weller, Charles Tobias; Zimmerman-Wilson, Carrie Ann; and Oliver, Eddie James, Jr., 6,340,578, Cl. 435-71.100.

Marti, Thomas: *See*—
Khosla, Chaitan; Hu, Zhihao; and Marti, Thomas, 6,340,774, Cl. 568-326.000.

Martin, Chris G.; and Ma, Manny Kin F., to Micron Technology, Inc. Test socket and methods. 6,340,896, Cl. 324-755.000.

Martin, David M.: *See*—
Gerstenberger, Michael D.; Greig, Scott D.; Martin, David M.; Mirza, Khalid; and Waled, El-Houssaine, 6,341,246, Cl. 700-245.000.

Martin, James A.: *See*—
Marshall, James W.; Martin, James A.; and Leimbach, Wendell B., 6,340,061, Cl. 172-41.000.

Martin, James D.: *See*—
Wheatley, Brian K.; Martin, James D.; and Lynch, Robert D., 6,340,401, Cl. 149-109.600.

Martin, Mary Frances: *See*—
Zhang, Mingbao; Kocur, Michael A.; and Martin, Mary Frances, 6,340,773, Cl. 564-384.000.

Martin, Pierre: *See*—
Ghisalba, Oreste; Marais, Guy Joel Christian; and Martin, Pierre, 6,340,754, Cl. 544-244.000.

Martinez, Ronald G.: *See*—
Herman, Gary; Goldstein, Theodore Charles; and Martinez, Ronald G., 6,341,353, Cl. 713-201.000.

Marui, Shogo; Hazama, Masatoshi; Notoya, Kohei; and Kato, Koki, to Takeda Chemical Industries, Ltd. Cell differentiation inducing amide derivatives, their production and use. 6,340,704, Cl. 514-463.000.

Marukawa, Shuhei: *See*—
Hamada, Shinji; Fujioka, Noriyuki; Marukawa, Shuhei; and Eto, Toyohiko, 6,340,311, Cl. 439-429.000.

Maruoka, Keiji, to Nagase & Co., Ltd. Optically active quarternary ammonium salt with axial chirality, method for producing thereof, and application thereof for asymmetric synthesis of α-amino acid. 6,340,753, Cl. 540-543.000.

Maruyama, Syoichi; Yamashiro, Sinichi; and Mishima, Kenji, to Hitachi, Ltd. Method of manufacturing electrical windings. 6,339,870, Cl. 29-596.000.

Maruyama, Toshiharu: *See*—
Ogawa, Tsuneshi; Maruyama, Toshiharu; Kozuki, Haruya; and Ozaki, Shintaro, 6,340,396, Cl. 148-23.000.

Maruyama, Yasuo: *See*—
Sugano, Toshihiko; Iwama, Naoshi; Isobe, Eiji; Suzuki, Toru; Maruyama, Yasuo; Hayakawa, Satoshi; Shoda, Hisashi; Kashimoto, Masami; Kato, Taku; Aoshima, Takayuki; Nishimura, Sugio; Suga, Yoshinori; and Sieber, Stefan, 6,340,652, Cl. 502-118.000.

Mary Lucarelli, Jennifer, executrix: *See*—
Lucarelli, Cesare, deceased; and Halpin, Brett, 6,340,402, Cl. 156-92.000.

Marzabadi, Mohammad R.; Noble, Stewart A.; and Desai, Mahesh N., to Synaptic Pharmaceutical Corporation. Selective NPY (Y5) antagonists (triazines). 6,340,683, Cl. 514-245.000.

Masai, Eiji; Fukuda, Masao; Katayama, Yoshihiro; Nishikawa, Seiji; and Hotta, Yasushi, to Cosmo Research Institute; and Cosmo Oil Co., Ltd. Gene encoding an alpha-hydroxy-gamma-carboxymuconic acid-epsilon-semialdehyde dehydrogenase. 6,340,579, Cl. 435-125.000.

Masaki, Kenji: *See*—
Hotomi, Hideo; Masaki, Kenji; and Yamamoto, Koji, 6,340,224, Cl. 347-70.000.

Masefield, John: *See*—
Korenev, Sergey Alexandrovich; Masefield, John; and Kriebel, Jerry, 6,340,718, Cl. 522-156.000.

Maslak, Samuel H.: *See*—
Krishnan, Sriram; Holley, Gregory L.; Gardner, Edward A.; and Maslak, Samuel H., 6,340,348, Cl. 600-447.000.

Massachusetts Institue of Technology: *See*—
Wolfson, Marilyn; Forman, Barbara; Hallowell, Robert; Moore, Michael; Wilson, James; and Henry, Sandra, 6,340,946, Cl. 342-26.000.

Massachusetts Institute of Technology: *See*—
Shirley, Lyle, 6,341,015, Cl. 356-517.000.

Mast, Stephen Owen: *See*—
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Masuda, Takeshi; Sumida, Yukihiro; and Ebi, Tsuyoshi, to Sharp Kabushiki Kaisha. Front light, and reflective type LCD including same. 6,340,999, Cl. 349-63.000.

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Masuda, Toshiaki: *See*—
Tanaka, Koji; Kitano, Kenichi; and Masuda, Toshiaki, 6,340,519, Cl. 428-327.000.

Matec S.p.A.: *See*—
Bertini, Giovanni; Brandani, Paolo; and Vivoli, Daniele, 6,339,943, Cl. 66-149.00R.

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Lashmore, David S.; Beane, Glenn L.; Deresh, Lev; and Hua, Zonglu, 6,340,397, Cl. 148-104.000.

Mathis, Gérard: *See*—
Bazin, Hervé; and Mathis, Gérard, 6,340,747, Cl. 536-23.100.

Matono, Takaaki: *See*—
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Matsubara, Jyun: *See*—
Segawa, Teruo; Matsubara, Jyun; Okuyama, Kaoru; Ueda, Yukihide; Takahashi, Shyouichi; Nakamura, Setsuo; Urakami, Kazuo; and Kishita, Shin, 6,339,874, Cl. 29-824.000.

Matsuda, Izuru: *See*—
Haraguchi, Hideo; and Matsuda, Izuru, 6,340,281, Cl. 414-783.000.

Matsuda, Masaaki: *See*—
Anno, Kouichi; Matsuda, Masaaki; Kawamura, Tetsuya; Okawara, Hiroshi; and Tanaka, Takeshi, 6,340,963, Cl. 345-92.000.

Matsuda, Susumu: *See*—

Kurumatani, Hajimu; Matsuda, Susumu; and Kainoh, Mie, 6,340,693, Cl. 514-337.000.

Matsuhashi, Shigeru: *See*—
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Matsumoto, Katsuo: *See*—
Nishimori, Yasutomo; Matsumoto, Katsuo; and Kenjo, Yukiko, 6,340,677, Cl. 514-169.000.

Matsumoto, Tadashi: *See*—
Koike, Yasuaki; Kawasaki, Takayuki; Nishiwaki, Shigehiro; Matsumoto, Tadashi; and Akita, Hideo, 6,341,230, Cl. 600-392.000.

Matsumoto, Takaji: *See*—
Saito, Takao; Murayama, Toshiyuki; Matsumoto, Takaji; and Miura, Takashi, 6,340,751, Cl. 540-200.000.

Matsumoto Yushi Seiyaku Co., Ltd.: *See*—
Tanaka, Koji; Kitano, Kenichi; and Masuda, Toshiaki, 6,340,519, Cl. 428-327.000.

Matsumura, Yasuo: *See*—
Maehata, Hideo; Matsumura, Yasuo; Yoshizawa, Hisae; and Suwabe, Masaaki, 6,340,549, Cl. 430-111.400.

Matsunaga, Hideki, to Sumitomo Wiring Systems, Ltd. Battery terminal. 6,340,319, Cl. 439-761.000.

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Matsuo, Mutsumi: *See*—
Tanaka, Chihiro; Matsuo, Mutsumi; Yokouchi, Yoshio; and Ushiki, Takeyoshi, 6,341,005, Cl. 349-149.000.

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Ikeda, Shin; Yoshioka, Toshihiko; and Nankai, Shiro, 6,340,428, Cl. 205-777.500.
Okuyama, Masatoshi; Sumiyama, Masahide; Okuzawa, Kazurou; and Fujii, Mutsufumi, 6,341,167, Cl. 381-407.000.

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Arita, Kiyoshi; Iwai, Tetsuhiro; and Haji, Hiroshi, 6,340,639, Cl. 438-729.000.
Ezawa, Kozo; Takizawa, Teruyuki; and Ueno, Shigeto, 6,341,119, Cl. 369-178.000.
Fukuda, Tetsuya; Nishimura, Takahiro; Sato, Jun; Ono, Koji; Nishimoto, Takumi; Ishihara, Yukihiro; and Sawada, Masaki, 6,340,801, Cl. 200-18.000.
Hamada, Shinji; Fujioka, Noriyuki; Marukawa, Shuhei; and Eto, Toyohiko, 6,340,311, Cl. 439-429.000.
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Inoue, Kazuo; and Uemura, Tsuyoshi, 6,341,000, Cl. 349-93.000.
Itoh, Junji, 6,341,216, Cl. 455-83.000.
Kamiyama, Toshifumi; Kunieda, Toshiaki; and Okazaki, Sadayuki, 6,340,501, Cl. 427-255.600.
Kuhn, Roland; and Junqua, Jean-Claude, 6,341,264, Cl. 704-255.000.
Nakamura, Takahiro, 6,340,996, Cl. 348-675.000.
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Ochiai, Toshiyuki; Furukawa, Yosuke; Tanaka, Yutaka; Kimura, Kozo; Hirai, Makoto; Kiyohara, Tokuzo; and Nishida, Hideshi, 6,340,973, Cl. 345-534.000.
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Shimomura, Koji, 6,340,557, Cl. 430-316.000.
Shirasaki, Yasuyo; Tanabe, Tomoko; and Kikuchi, Chuichi, 6,341,176, Cl. 382-229.000.
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Tsuura, Katsuhiko, 6,340,604, Cl. 438-15.000.
Uesugi, Mitsuru, 6,341,214, Cl. 455-69.000.
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Yamanaka, Hiroshi; Suzuki, Toshiyuki; and Nakata, Kazunobu, 6,340,923, Cl. 335-4.000.

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Watanabe, Kazuo; Okamuro, Toshihiko; Inoue, Toshiyasu; and Yoshida, Hiroshi, 6,340,157, Cl. 271-301.000.

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Tsukuda, Koji, 6,340,470, Cl. 424-439.000.

Matsutera, Hisao: *See*—
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Matsuzaki, Haruki: *See*—
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Maxted, Sean Kenneth, to Natural Input Solutions Inc. Pen based edit correction interface method and apparatus. 6,340,967, Cl. 345-179.000.

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Comeau, Laurier E.; Vandenberg, Elis; Cargill, Edward James; Hardin, John Ransford, Jr.; Maxwell, Terrance Dean; Restau, Bryan James; Ramirez, Frank Seadio; Walker, Colin; and Hay, Rick, 6,340,063, Cl. 175-61.000.

Mayberry, Michael T.: *See*—
Lumpkin, Wayne R.; and Mayberry, Michael T., 6,340,074, Cl. 188-26.000.

Mayer, Guenter: *See*—
Eckert, Martin; Mayer, Guenter; Pille, Juergen; and Wendel, Dieter, 6,341,093, Cl. 365-201.000.

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Peeters, Eric; Noolandi, Jaan; Apte, Raj B.; Floyd, Philip D.; Small, Jonathan A.; Kovacs, Gregory J.; Lean, Meng H.; Volkel, Armin R.; Bolte, Steven B.; Shi, An-Chang; Endicott, Frederick J.; Anderson, Gregory B.; Hays, Dan A.; Kubby, Joel A.; Jackson, Warren B.; Moffat, Karen A.; McAneney, T. Brian; Veregin, Richard P. N.; McDougall, Maria N. V.; Boils, Danielle C.; and Szabo, Paul D., 6,340,216, Cl. 347-21.000.

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Lane, Steven O.; and McCleary, James C., 6,340,949, Cl. 342-373.000.

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Hreha, Mark A.; and Schkolnik, Gerard, 6,341,247, Cl. 701-3.000.

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Vasey-Glandon, Virginia M.; Hale, Richard D.; and Schmitz, Jeffrey J., 6,341,261, Cl. 703-6.000.

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Goessling, Kent; and McKay, John, 6,339,882, Cl. 29-890.127.

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Verbeck, Marcel A. E, 6,340,368, Cl. 623-1.340.

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Tessarolo, Alexander; and Mehendale, Mahesh, 6,341,344, Cl. 712-202.000.

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Iyer, Ravi; and Sharan, Sujit, 6,340,637, Cl. 438-685.000.
Ladd, John W., 6,340,302, Cl. 439-40.000.
Manning, Troy A., 6,340,904, Cl. 327-156.000.
Martin, Chris G.; and Ma, Manny Kin F., 6,340,896, Cl. 324-755.000.
Noble, Wendell P.; and Forbes, Leonard, 6,340,612, Cl. 438-213.000.
Pan, Pai-Hung, 6,340,627, Cl. 438-585.000.
Rolfson, J. Brett; and Manning, Monte, 6,340,834, Cl. 257-538.000.
Rolfson, J. Brett; and Manning, Monte, 6,340,835, Cl. 257-538.000.
Sandhu, Gurtej S.; Iyer, Ravi; and Sharan, Sujit, 6,340,499, Cl. 427-248.100.

Microsoft Corporation: *See*—
Borseth, Jay Alan, 6,340,997, Cl. 348-731.000.
Smith, Brian J.; Valloppillil, Vinod V.; and Hurvig, Hans, 6,341,311, Cl. 709-226.000.

Microtech Filters Limited: *See*—
Lucarelli, Cesare, deceased; and Halpin, Brett, 6,340,402, Cl. 156-92.000.

Midha, Kamal K.; Iorio, Theodore L.; and Chungi, Shubha, to Armaquest, Inc. Pharmaceutical dosage form for pulsatile delivery of methylphenidate. 6,340,476, Cl. 424-469.000.

Miertus, Stanislav: *See*—
Svorc, Josef; Miertus, Stanislav; and Stredansky, Miroslav, 6,340,597, Cl. 436-518.000.

Miesner, John E., to General Dynamics Advanced Technology Systems, Inc. Shock and acoustic mount. 6,340,153, Cl. 267-140.110.

Mihalik, Richard, to Phoenix Scientific, Inc. Parasiticidal formulation and a method of making this formulation. 6,340,672, Cl. 514-30.000.

Mihara, Yasuhiro: *See*—
Suzuki, Shunichi; Sugiyama, Masakazu; Mori, Maiko; Mihara, Yasuhiro; and Yokozeki, Kenzo, 6,340,582, Cl. 435-158.000.

Mikame, Daisuke: *See*—
Hasebe, Yuu; Shimasaki, Hirato; Kubota, Makoto; Mikame, Daisuke; and Imamoto, Yasunori, 6,340,337, Cl. 473-349.000.

Mikami, Tomohisa: *See*—
Sasaki, Sachio; Kodama, Jun; Mikami, Tomohisa; and Kimura, Masatoshi, 6,341,207, Cl. 399-149.000.

Mikohn Gaming Corporation: *See*—
Pierce, Jesse E.; and Vancura, Olaf, 6,340,158, Cl. 273-138.100.

Mikuni Adec Corporation: *See*—
Kubota, Kenichi; and Chiba, Noriaki, 6,340,294, Cl. 417-395.000.

Millennium Pharmaceuticals, Inc.: *See*—
Bertin, John, 6,340,576, Cl. 435-69.100.

Miller, Michael F.: *See*—
Flanders, Dale C.; Whitney, Peter S.; and Miller, Michael F., 6,341,039, Cl. 359-578.000.

Miller, Michael Lee, to International Business Machines Corporation. Full bridge power converter with enhanced resonant switching. 6,341,078, Cl. 363-98.000.

Miller, Robert E.; Marquis, James A.; and Davis, Paul K., to Pacific Roller Die Co., Inc. Apparatus for forming tapered spiral tubes. 6,339,945, Cl. 72-49.000.

Millhoff, Juergen; Gassenmeier, Thomas; Liphard, Maria; Artiga González, Rene-Andres; Hammerstein, Stefan; and Kraus, Ingrid, to Henkel Kommanditgesellschaft Auf Aktien (KGaA). Aqueous foam regulator emulsion. 6,340,662, Cl. 510-417.000.

Millhoff, Juergen: *See*—
Gassenmeier, Thomas; Schambil, Fred; and Millhoff, Juergen, 6,340,664, Cl. 510-441.000.

Milliken & Company: *See*—
Kerr, Robert C.; and Burke, William O., III, 6,340,514, Cl. 428-159.000.

Millman, Michael S.: *See*—
Gaylor, Dean A.; Millman, Michael S.; and Barinaga, John A., 6,340,220, Cl. 347-35.000.

Milobinski, Marc: *See*—
Ritchie, Norman E.; Sameck, Christopher J.; and Milobinski, Marc, 6,340,152, Cl. 267-64.120.

Milovich, Dimitrije: *See*—
Nelson, Ronald H.; Milovich, Dimitrije; Clark, Paul Nordstrom; and Loughry, Gregory Joseph, 6,340,509, Cl. 428-34.700.

Mimura, Kazuya: *See*—
Sakata, Koji; Mimura, Kazuya; and Nakazawa, Yutaka, 6,341,058, Cl. 361-502.000.

Mindrum, Gordon Scott, to Making Everlasting Memories, Ltd. Method and apparatus for recording and presenting life stories. 6,340,978, Cl. 345-764.000.

Mineta, Naoshi: *See*—
Kitahara, Mikio; Mori, Minehiro; Mineta, Naoshi; and Kayama, Takashi, 6,340,518, Cl. 428-215.000.

Ming, Lu: *See*—
Sapru, Krishna; Ramachandran, Subramanian; and Ming, Lu, 6,340,376, Cl. 75-10.140.

MiniMed Inc.: *See*—
Vachon, David J.; and Wang, Jenn-Hann, 6,340,421, Cl. 205-133.000.

Minkkinen, Ari; Le Gal, Jean-Hervé; and Marache, Pierre, to Institut Francais du Petrole. Process and device for separating ethane and ethylene from a steam-cracking effluent by solvent absorption and hydrogenation of the solvent phase. 6,340,429, Cl. 208-87.000.

Minnesota Mining and Manufacturing Company: *See*—
Wandmacher, Robert A.; Chor, Lawrence C.; and Larson, John T., 6,340,794, Cl. 174-73.100.

Minolta Co., Ltd.: *See*—
Hamada, Takatoshi; Hiraguchi, Hiroshi; Goto, Masaaki; and Satake, Takeshi, 6,340,983, Cl. 347-131.000.
Hotomi, Hideo; Masaki, Kenji; and Yamamoto, Koji, 6,340,224, Cl. 347-70.000.
Takeshita, Kenji; Kohsaka, Jun; and Nagasaka, Yasushi, 6,341,030, Cl. 359-216.000.
Tsujimoto, Takahiro; and Kimata, Akinori, 6,341,211, Cl. 399-330.000.

Minowa, Nobuaki: *See*—
Imura, Kohichi; Uemoto, Hideo; Hojo, Akimichi; Tanaka, Junzo; Kikuchi, Masanori; Suetsugu, Yasushi; Yamazaki, Hiraku; Kinoshita, Masami; and Minowa, Nobuaki, 6,340,648, Cl. 501-80.000.

Mirarchi, Thomas F.: *See*—
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Mirza, Khalid: *See*—
Gerstenberger, Michael D.; Greig, Scott D.; Martin, David M.; Mirza, Khalid; and Waled, El-Houssaine, 6,341,246, Cl. 700-245.000.

Misawa, Seiichi: *See*—
Ishii, Toshiyuki; Misono, Kousuke; Misawa, Seiichi; Fukuda, Joji; Nishigaki, Tetsuo; and Ota, Kiyoshi, 6,341,047, Cl. 360-72.200.

Mishima, Kenji: *See*—
Maruyama, Syoichi; Yamashiro, Sinichi; and Mishima, Kenji, 6,339,870, Cl. 29-596.000.

Mishra, Bhubaneswar: *See*—
Schwartz, David C.; Mishra, Bhubaneswar; and Anantharaman, Thomas S., 6,340,567, Cl. 435-6.000.

Misiewicz-DelZotto, Laura: *See*—
Stanton, Kelly; and Misiewicz-DelZotto, Laura, 6,340,269, Cl. 405-53.000.

Misono, Kousuke: *See*—
Ishii, Toshiyuki; Misono, Kousuke; Misawa, Seiichi; Fukuda, Joji; Nishigaki, Tetsuo; and Ota, Kiyoshi, 6,341,047, Cl. 360-72.200.

Mississippi State University: *See*—
Costley, R. Daniel; and Henderson, Mark, 6,339,960, Cl. 73-579.000.

Mita, Shinsuke: *See*—
Tanaka, Ichiro; Yashiki, Hiroyoshi; Maeda, Mitsuyo; Nakayama, Taisei; Honjou, Noriyuki; and Mita, Shinsuke, 6,340,399, Cl. 148-308.000.

Mita, Yoshinori; and Anazawa, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Rechargeable cell support device with insulating rings. 6,340,877, Cl. 320-112.000.

Mitac Technology Corp.: *See*—
Lin, Wen-Feng, 6,340,969, Cl. 345-211.000.

Mitchell, Alton: *See*—
Johnson, Mitchell D.; Klein, Michael A.; Parks, Matthew David; Karl, Mark Thomas; Johnson, Patrick; Spahr, Tim; Sajna, Jeff; Andrews, Craig; Higgins, Kenneth Terry; Lowery, Robert A.; Ruby, Keith D.; Mitchell, Alton; and Davis, Rhonda L., 6,340,186, Cl. 293-120.000.

Mitchell, Christopher M.: *See*—
Sziklai, Anthony T.; Verma, Ashish K.; Popowski, Judith E.; Frankland, Richard; Mitchell, Christopher M.; Ferguson, Joseph D.; and Sturgeon, Douglas H., 6,341,287, Cl. 707-102.000.

Mitchell, Robert E. Advertising materials and method for cooperative promotions. 6,340,179, Cl. 283-67.000.

Mitchell, William M.; and Stratton, Charles W., to Vanderbilt University. Identification of antigenic peptide sequences. 6,340,463, Cl. 424-263.100.

Mithen, Richard; Faulkner, Kathy; and Williamson, Gary, to Plant Bioscience Limited. Method for selective increase of the anticarcinogenic glucosinolates in *Brassica sp.. 6,340,784, Cl. 800-306.000.*

Mito, Yosuke; and Furukawa, Kazuhiko, to Mitsubishi Pencil Kabushiki Kaisha. Direct-feed type writing implement. 6,340,259, Cl. 401-198.000.

Mitsubishi Chemical Corporation: *See*—
Sugano, Toshihiko; Iwama, Naoshi; Isobe, Eiji; Suzuki, Toru; Maruyama, Yasuo; Hayakawa, Satoshi; Shoda, Hisashi; Kashimoto, Masami; Kato, Taku; Aoshima, Takayuki; Nishimura, Sugio; Suga, Yoshinori; and Sieber, Stefan, 6,340,652, Cl. 502-118.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Hamada, Kazuya; Morita, Shingo; Murata, Shigemi; and Koiwa, Mitsuru, 6,340,303, Cl. 439-127.000.
Hirano, Yuuichi; Yamaguchi, Yasuo; and Maegawa, Shigeto, 6,340,829, Cl. 257-347.000.
Hisada, Masaaki, 6,340,934, Cl. 340-928.000.
Kamemaru, Toshihisa, 6,341,334, Cl. 711-137.000.
Kato, Hiroshi, 6,340,902, Cl. 327-77.000.
Kitade, Osamu, 6,340,823, Cl. 257-48.000.
Kunikiyo, Tatsuya, 6,341,087, Cl. 365-189.090.
Mizoguchi, Shinichi, 6,340,852, Cl. 307-125.000.

Mugibayashi, Toshiaki; and Hattori, Nobuyoshi, 6,341,241, Cl. 700-110.000.
Muranaka, Seiji; Tanaka, Hiroshi; and Hori, Yoshiyuki, 6,340,253, Cl. 396-611.000.
Nagamura, Yoshikazu; Suzuki, Kazuhito; Hosono, Kunihiro; and Yoshioka, Nobuyuki, 6,340,543, Cl. 430-5.000.
Nakajima, Hajime; and Ruther, Patrick, 6,341,043, Cl. 359-625.000.
Nakane, Kazuhiko, 6,341,105, Cl. 369-44.270.
Nishimoto, Yoichiro; Arimoto, Satoshi; and Namba, Keisuke, 6,340,640, Cl. 438-753.000.
Oguchi, Mariko; Saito, Masayuki; and Miyata, Kimiyoshi, 6,340,976, Cl. 345-690.000.
Sakamori, Shigenori, 6,340,844, Cl. 257-774.000.
Sawada, Seiji; Furutani, Kiyohiro; and Asakura, Mikio, 6,341,089, Cl. 365-191.000.
Tsujishita, Masahiro; Ishida, Masayuki; Taura, Kenichi; Ohkubo, Tadatoshi; and Morita, Masakazu, 6,341,123, Cl. 370-210.000.
Yamagata, Tadato; Arimoto, Kazutami; and Tsukude, Masaki, 6,341,098, Cl. 365-226.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Ogawa, Noriyoshi; Kanagawa, Tatsuya; and Nakatani, Hidekazu, 6,340,737, Cl. 528-196.000.

Mitsubishi Heavy Industries, Ltd.: *See*—
Fujimoto, Shinichi; and Kihara, Teruaki, 6,339,989, Cl. 101-367.000.
Hirai, Etsuro; Furuya, Takumi; Saka, Masato; and Taniguchi, Nobuyuki, 6,340,028, Cl. 134-122.00R.
Ikeda, Tetsuya; and Danno, Minoru, 6,340,863, Cl. 315-111.210.
Isoyama, Shigeru; Hirabayashi, Takeshi; Yamasaki, Takahiro; Kagawa, Takushi; Nagai, Kazunori; Ishibashi, Naohiko; and Okai, Takashi, 6,340,108, Cl. 228-102.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Ueda, Katsunori; Kaihara, Kuniaki; Ando, Hiromitsu; and Takemura, Jun, 6,340,016, Cl. 123-305.000.

Mitsubishi Materials Corporation: *See*—
Nagaya, Hidehiko; and Shimomura, Hiroshi, 6,339,868, Cl. 29-447.000.
Shimomura, Hiroshi; and Nagaya, Hidehiko, 6,340,274, Cl. 407-34.000.

Mitsubishi Pencil Kabushiki Kaisha: *See*—
Furukawa, Kazuhiko, 6,340,261, Cl. 401-216.000.
Komiya, Motohiro; and Iida, Hisashi, 6,340,262, Cl. 401-224.000.
Mito, Yosuke; and Furukawa, Kazuhiko, 6,340,259, Cl. 401-198.000.

Mitsuhashi, Etsuo: *See*—
Arai, Michio; Kobori, Isamu; and Mitsuhashi, Etsuo, 6,340,537, Cl. 428-690.000.

Mitsui Chemicals, Inc.: *See*—
Kitahara, Mikio; Mori, Minehiro; Mineta, Naoshi; and Kayama, Takashi, 6,340,518, Cl. 428-215.000.

Mitsui, Sunao: *See*—
Yamaguchi, Satoshi; Nakagawa, Satoshi; Mitsui, Sunao; and Ohno, Susumu, 6,340,539, Cl. 429-213.000.

Mitsumi Electric Co., Ltd.: *See*—
Higashijima, Yasuhisa; Terada, Yukihiro; and Nagaoka, Hiroshi, 6,340,880, Cl. 320-162.000.
Hironaka, Hisakazu; Shimizu, Toshiharu; Majima, Yoshihide; Itoh, Toshimitsu; and Touji, Hidetsugu, 6,341,045, Cl. 360-48.000.

Mitutoyo Corporation: *See*—
Tanaka, Shoichi; and Sano, Hidekazu, 6,341,037, Cl. 359-393.000.

Miura, Ichiro: *See*—
Yamada, Hiromichi; Miura, Ichiro; Doi, Motomichi; Miyazaki, Osamu; and Yoshida, Minoru, 6,340,436, Cl. 252-301.450.

Miura, Takashi: *See*—
Saito, Takao; Murayama, Toshiyuki; Matsumoto, Takaji; and Miura, Takashi, 6,340,751, Cl. 540-200.000.

Miura, Yasutada; and Hisata, Nahoko, to Olympus Optical Co., Ltd. Confocal microscope. 6,341,035, Cl. 359-363.000.

Miura, Yoshinori; and Izumi, Hideo, to Alps Electric Co., Ltd. Digital-signal forming circuit. 6,340,941, Cl. 341-155.000.

Miyahara, Nobuyoshi; and Yagasaki, Yoichi, to Sony Corporation. Device and method for processing image data, transmitting medium, and recording medium. 6,341,350, Cl. 713-176.000.

Miyajima, Kazumoto: *See*—
Kurihara, Hideshi; Takao, Seiichi; Miyajima, Kazumoto; Yamamoto, Shinya; and Takase, Toru, 6,340,443, Cl. 264-464.000.

Miyake, Hideo; and Kawauchi, Ikuo, to Fuji Film Co., Ltd. Positive type photosensitive image-forming material for use with an infrared laser. 6,340,551, Cl. 430-192.000.

Miyaki, Yoshinori; Suzuki, Kazunari; and Omoda, Daisuke, to Hitachi, Ltd.; and Hitachi ULSI Systems Co., Ltd. Semiconductor device and method of fabricating the same. 6,340,837, Cl. 257-666.000.

Miyamoto, Makoto; Terao, Motoyasu; Fukui, Yukio; Tokushuku, Nobuhiro; Andoo, Keikichi; Nishida, Tetsuya; Hirotsune, Akemi; Miyauchi, Yasushi; and Moritani, Koichi, to Hitachi, Ltd. Information recording medium and information recording and reproducing apparatus using the same. 6,340,555, Cl. 430-270.130.

Miyamoto, Noriyuki: *See*—
Suzuki, Mikio; Miyamoto, Noriyuki; Shimaoka, Emi; and Takagi, Kimie, 6,340,505, Cl. 427-570.000.

Miyata, Kimiyoshi: *See*—
Oguchi, Mariko; Saito, Masayuki; and Miyata, Kimiyoshi, 6,340,976, Cl. 345-690.000.

Miyatake, Takafumi: *See*—
Nagasaka, Akio; Miyatake, Takafumi; Fujita, Takehiro; Taniguchi, Katsumi; and Tanaka, Kazuaki, 6,341,168, Cl. 382-107.000.

Miyauchi, Yasushi: *See*—
Miyamoto, Makoto; Terao, Motoyasu; Fukui, Yukio; Tokushuku, Nobuhiro; Andoo, Keikichi; Nishida, Tetsuya; Hirotsune, Akemi; Miyauchi, Yasushi; and Moritani, Koichi, 6,340,555, Cl. 430-270.130.

Miyazaki, Akihiro: *See*—
Otani, Hisao; and Miyazaki, Akihiro, 6,341,115, Cl. 369-77.100.

Miyazaki, Osamu: *See*—
Yamada, Hiromichi; Miura, Ichiro; Doi, Motomichi; Miyazaki, Osamu; and Yoshida, Minoru, 6,340,436, Cl. 252-301.450.

Mizoguchi, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Voltage generating circuit capable of stably supplying power supply voltage less than rated voltage. 6,340,852, Cl. 307-125.000.

Mizoguchi, Yoshihiro: *See*—
Yamaguchi, Naoki; Tanizaki, Junichi; Houman, Takeshi; Hattori, Toshimi; Mizoguchi, Yoshihiro; Ijima, Yoshiaki; and Kawano, Yuzo, 6,341,206, Cl. 399-103.000.

Mizrahi, Victor; and Harmon, Stephen R., to Ciena Corporation. WDM optical communication systems with wavelength-stabilized optical selectors. 6,341,025, Cl. 359-130.000.

Mizukawa, Yuki: *See*—
Naruse, Hideaki; and Mizukawa, Yuki, 6,340,561, Cl. 430-503.000.

Mizuno, Hiroshi; Kinoshita, Osamu; Murohashi, Tetsuaki; Ueno, Akihisa; Sakuma, Yoshifumi; and Amberiadis, Kostas, to LSI Logic Corporation. Method and apparatus for chemical-mechanical polishing. 6,340,434, Cl. 216-38.000.

Mizuno, Katsutoshi: *See*—
Tanaka, Hiroaki; Ogawa, Osamu; Kajitani, Yoshimi; Takakuwa, Kei; Ohshima, Toshiki; Mizuno, Katsutoshi; Ino, Naohito; and Ishihara, Shigeo, 6,339,967, Cl. 74-409.000.

Mizutani, Yasushi, to Fujitsu Limited. Flip-flop control circuit, processor, and method for operating processor. 6,340,906, Cl. 327-198.000.

MJ Research, Inc.: *See*—
Turner, Bruce R.; and Titus, David E., 6,340,589, Cl. 435-287.200.

Mobile Impact, Inc.: *See*—
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Mochida, Tetsuya: *See*—
Kondo, Nobukazu; Kaneko, Seiji; Okazawa, Koichi; Gemma, Hideaki; Mochida, Tetsuya; and Hayashi, Takehisa, 6,341,323, Cl. 710-129.000.

Mochizuki, Naoto: *See*—
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Modeen, Douglas P.; Games, John E.; and Faust, Norman J., to United Technologies Corporation. Robust engine variable vane monitor logic. 6,341,238, Cl. 700-66.000.

Moffat, Karen A.: *See*—
Peeters, Eric; Noolandi, Jaan; Apte, Raj B.; Floyd, Philip D.; Small, Jonathan A.; Kovacs, Gregory J.; Lean, Meng H.; Volkel, Armin R.; Bolte, Steven B.; Shi, An-Chang; Endicott, Frederick J.; Anderson, Gregory B.; Hays, Dan A.; Kubby, Joel A.; Jackson, Warren B.; Moffat, Karen A.; McAneney, T. Brian; Veregin, Richard P. N.; McDougall, Maria N. V.; Boils, Danielle C.; and Szabo, Paul D., 6,340,216, Cl. 347-21.000.

Moghadam, Farhad K.: *See*—
Bjorkman, Claes H.; Yu, Min Melissa; Shan, Hongquing; Cheung, David W.; Yau, Wai-Fan; Liu, Kuowei; Chapra, Nasreen Gazala; Yin, Gerald; Moghadam, Farhad K.; Huang, Judy H.; Yost, Dennis; Tang, Betty; and Kim, Yunsang, 6,340,435, Cl. 216-72.000.

Mollick, Horst; and Hopfner, Dieter, to Universal City Studios, Inc. Amusement ride vehicle with wheelchair ramp. 6,340,280, Cl. 414-537.000.

Molnar, Charles E., deceased (by Donna A. Molnar, legal representative), to Sun Microsystems, Inc. Measurement of signal propagation delay using arbiters. 6,340,901, Cl. 327-19.000.

Molnar, Donna A., legal representative: *See*—
Molnar, Charles E., deceased, 6,340,901, Cl. 327-19.000.

Molner, Ellen Ann: *See*—
Narula, Anubhav P. S.; Arruda, Edward; Koestler, James Joseph; and Molner, Ellen Ann, 6,340,666, Cl. 512-25.000.

Momoda, Junji; and Kawabata, Yuichiro, to Tokuyama Corporation. Chromene compound. 6,340,765, Cl. 549-330.000.

Momoi, Yasuyuki: *See*—
Inoue, Masahiko; Horiuchi, Toshihiko; Momoi, Yasuyuki; Konno, Takao; and Yamagishi, Wataru, 6,341,258, Cl. 702-56.000.

Momose, Akira: *See*—
Katou, Michiya; Sawafuji, Kazunori; and Momose, Akira, 6,340,929, Cl. 340-447.000.

Monette, Daniel A.; and Brown, Patrick L., to Eaton Corporation. Slave valve with integral syncho-saver logic. 6,339,973, Cl. 74-745.000.

Monget, Daniel: *See*—
Armstrong, Lyle; James, Arthur; Monget, Daniel; and Orenga, Sylvain, 6,340,573, Cl. 435-18.000.

Monsanto Technology, LLC: *See*—
Obukowicz, Mark; Kabakibi, Ayman; Green, Susan L.; Olson, Lisa M.; and Lindemann, Julie, 6,340,705, Cl. 514-560.000.

Moon, Matthew D.: *See*—
Curran, Thomas F., Jr.; Krywanczyk, Timothy C.; Lube, Michael S.; Moon, Matthew D.; Nadeau, Rock; Reynolds, Clark D.; Schaffer, Dean A.; Sharrow, Joel M.; Smith, Paul H., Jr.; Thomas, David C.; White, Eric J.; and Yao, Kenneth H., 6,340,601, Cl. 438-4.000.

Moore, David M.: *See*—

Kloba, David D.; Gray, Michael R.; Moore, David M.; Whittaker, Thomas E.; Williams, David J.; Weinstein, Rafael Z.; Freeman, Joshua E.; and Upson, Linus M., 6,341,316, Cl. 709-248.000.

Moore, Kyle: *See*—
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Moore, Michael: *See*—
Wolfson, Marilyn; Forman, Barbara; Hallowell, Robert; Moore, Michael; Wilson, James; and Henry, Sandra, 6,340,946, Cl. 342-26.000.

Moore North America, Inc.: *See*—
Parker, Rebecca L.; and Meyer, Richard C., 6,340,406, Cl. 156-442.100.

Moore, Stephen Raymond: *See*—
Cain, Frederick William; Dekker, Willem; and Moore, Stephen Raymond, 6,340,491, Cl. 426-554.000.

Moravec, John V.: *See*—
Fitzgibbon, James J.; Moravec, John V.; and Farris, Bradley, 6,340,872, Cl. 318-9.000.

Morazzoni, Gabriele: *See*—
Napoletano, Mauro; Norcini, Gabriele; Grancini, Giancarlo; Pellacini, Franco; and Morazzoni, Gabriele, 6,340,684, Cl. 514-248.000.

Mordon, Serge: *See*—
Sumian, Chryslain; Pitre, Franck; and Mordon, Serge, 6,340,495, Cl. 427-1.000.

Morelli, Thomas Anthony, II: *See*—
Salvo, Joseph James; Mackenzie, Patricia Denise; Bennett, Janet Sue; Relyea, Heather Ann; and Morelli, Thomas Anthony, II, 6,341,271, Cl. 705-28.000.

Moretti, Stephen L.; and Bushnell, Peter R., to Carrier Corporation. Evaporator scroll for blower wheel. 6,339,935, Cl. 62-262.000.

Morgan, Barry Z.: *See*—
Castle, Jeffrey G.; and Morgan, Barry Z., 6,341,163, Cl. 379-449.000.

Morgan, Bridie, legal representative: *See*—
McNally, Vincent; Morgan, James Patrick, deceased, 6,340,469, Cl. 424-438.000.

Morgan, Frederick Marshall: *See*—
Lys, Ihor; Mueller, George G.; Morgan, Frederick Marshall; and Blackwell, Michael K., 6,340,868, Cl. 315-185.00S.

Morgan, James Patrick, deceased (by Bridie Morgan, legal representative): *See*—
McNally, Vincent; Morgan, James Patrick, deceased, 6,340,469, Cl. 424-438.000.

Morgan, Robert Clark: *See*—
Tang, Weiming; Mares, Frank; and Morgan, Robert Clark, 6,340,524, Cl. 428-364.000.

Mori, Hideaki: *See*—
Kaiho, Masayuki; Mori, Hideaki; Kieda, Shigekazu; Shiobara, Ryoichi; Hattori, Kenichi; and Komura, Akiyoshi, 6,340,853, Cl. 310-61.000.

Mori, Ichiro: *See*—
Inoue, Soichi; Kyoh, Suigen; Higashikawa, Iwao; and Mori, Ichiro, 6,340,542, Cl. 430-5.000.

Mori, Maiko: *See*—
Suzuki, Shunichi; Sugiyama, Masakazu; Mori, Maiko; Mihara, Yasuhiro; and Yokozeki, Kenzo, 6,340,582, Cl. 435-158.000.

Mori, Masashi: *See*—
Furuhashi, Tsutomu; Konuma, Satoshi; Mori, Tatsumi; Kurihara, Hiroshi; Nishitani, Shigeyuki; Mori, Masashi; and Maeda, Takeshi, 6,340,970, Cl. 345-213.000.

Mori, Minehiro: *See*—
Kitahara, Mikio; Mori, Minehiro; Mineta, Naoshi; and Kayama, Takashi, 6,340,518, Cl. 428-215.000.

Mori, Tatsumi: *See*—
Furuhashi, Tsutomu; Konuma, Satoshi; Mori, Tatsumi; Kurihara, Hiroshi; Nishitani, Shigeyuki; Mori, Masashi; and Maeda, Takeshi, 6,340,970, Cl. 345-213.000.

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Mori, Yoshihiro: *See*—
Okada, Tomoyuki; Mori, Yoshihiro; Tsuga, Kazuhiro; Hamasaka, Hiroshi; Ishihara, Hideshi; Nakamura, Kazuhiko; and Hasebe, Takumi, 6,341,199, Cl. 386-98.000.

Morimoto, Kiyoshi: *See*—
Inaba, Tadashi; Morimoto, Kiyoshi; and Hirano, Shigeo, 6,340,560, Cl. 430-455.000.

Morinaka, Ren: *See*—
Enomoto, Kunio; Hirano, Katsuhiko; Hayashi, Eisaku; Morinaka, Ren; Shimizu, Sadato; Kanno, Satoshi; Tanaka, Shigeru; and Ishikawa, Tetsuya, 6,341,151, Cl. 376-305.000.

Morishita, Nobuyasu: *See*—
Hayashi, Kiyoshi; Morishita, Nobuyasu; and Ikoma, Munehisa, 6,340,453, Cl. 423-592.000.

Morita, Kazuhiro: *See*—
Yoshida, Hiroshi; Ohmori, Kiyoshi; Fuse, Kensaku; Morita, Kazuhiro; Onduka, Yoshitaka; and Yokota, Naoyuki, 6,340,757, Cl. 544-319.000.

Morita, Masakazu: *See*—
Tsujishita, Masahiro; Ishida, Masayuki; Taura, Kenichi; Ohkubo, Tadatoshi; and Morita, Masakazu, 6,341,123, Cl. 370-210.000.

Morita, Shingo: *See*—
Hamada, Kazuya; Morita, Shingo; Murata, Shigemi; and Koiwa, Mitsuru, 6,340,303, Cl. 439-127.000.

Morita, Toshiaki: *See*—
Majer, Sigmar; Schuler, Bernhard, deceased; Wiedenhöfer, Kurt; Morita, Toshiaki; and Kitahara, Kenji, 6,339,942, Cl. 66-120.000.

Moritani, Koichi: *See*—
Miyamoto, Makoto; Terao, Motoyasu; Fukui, Yukio; Tokushuku, Nobuhiro; Andoo, Keikichi; Nishida, Tetsuya; Hirotsune, Akemi; Miyauchi, Yasushi; and Moritani, Koichi, 6,340,555, Cl. 430-270.130.

Moriwaki, Hisayoshi: *See*—
Kohashi, Takashi; Ogino, Akira; Moriwaki, Hisayoshi; Kimura, Yuji; and Ikeda, Nozomu, 6,341,141, Cl. 375-137.000.

Morning Pride Manufacturing, L.L.C.: *See*—
Grilliot, William L.; and Grilliot, Mary I., 6,339,843, Cl. 2-97.000.

Morohashi, Takashi: *See*—
Usami, Yoshihisa; Shibata, Michihiro; Komori, Noboru; Ishida, Toshio; and Morohashi, Takashi, 6,341,122, Cl. 369-275.400.

Moroni, Pascal: *See*—
Villemazet, Jean-François; Moroni, Pascal; and Cogo, Bernard, 6,340,917, Cl. 330-149.000.

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Morrison, Robert D.; and Roylance, Eugene A., to Hewlett-Packard Company. Method and device for time shifting transitions in an imaging device. 6,340,986, Cl. 347-249.000.

Moser, Lawrence W.: *See*—
Bohannon, Terry L.; O'Heeron, Peter T.; Ogle, James R.; and Moser, Lawrence W., 6,340,358, Cl. 604-264.000.

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Möster, Erik; Larsson, Paul; Olsson, Mats; Simonsson, Olof; Larsson, Mats; and Portela, Rafael, to Telefonaktiebolaget LM Ericsson (publ). Method and apparatus for reducing effect of mismatches and increasing the rigidity of mobile communication device. 6,341,227, Cl. 455-550.000.

Mostov, Keith E.; and Richman-Eisenstat, Janice, to University of California, The Regents of the. Antibodies to PIGR stalk. 6,340,743, Cl. 530-387.900.

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Vidyanand, Ramgopal; Schwarz, James K., Jr.; and Motamed, Margaret, 6,341,018, Cl. 358-1.180.

Motorola, Inc.: *See*—
Neumiller, Phillip D.; Popowski, Paul M.; and Rotstein, Ron, 6,341,222, Cl. 455-422.000.
Oglesbee, John Wendell, 6,340,878, Cl. 320-150.000.

Motsiff, William Thomas: *See*—
Berger, Daniel George; Brouillette, Guy Paul; Danovitch, David Hirsch; Gruber, Peter Alfred; Humphrey, Bruce Lee; Liehr, Michael; Motsiff, William Thomas; and Sambucetti, Carlos Juan, 6,340,630, Cl. 438-613.000.

Moulton, Jeffrey D.: *See*—
Porter, Simon J.; Moulton, Jeffrey D.; and Altizer, Lance R., 6,340,530, Cl. 428-474.400.

Mountainspeed: *See*—
Paris, Joshua A., 6,339,972, Cl. 74-564.000.

Mourad, Magda Mahmoud: *See*—
Doganata, Yurdaer Nezihi; Marconcini, Franco; Mourad, Magda Mahmoud; Munson, Jonathan P.; Pacifici, Giovanni; and Tantawi, Asser Nasreldin, 6,341,314, Cl. 709-229.000.

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Mower CHF Treatment Irrevocable Trust: *See*—
Mower, Morton M., 6,341,235, Cl. 607-9.000.

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Vandrak, Brian S.; DuRoss, John D., Jr.; and Haire, Allan L., 6,340,298, Cl. 432-222.000.

Mr. Steven Campbell: *See*—
Campbell, Steven, 6,339,996, Cl. 114-74.00R.

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Lys, Ihor; Mueller, George G.; Morgan, Frederick Marshall; and Blackwell, Michael K., 6,340,868, Cl. 315-185.00S.

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Buchecker, Richard; Marck, Guy; and Muller, Olivier, 6,340,506, Cl. 428-1.260.

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Albrecht, Markus; and Muller, Wolfgang, 6,339,864, Cl. 16-258.000.

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Munoz-Garcia, Samuel; Nomoto, Shinichi; Poskett, Peter; Mullins, Dennis; Hutchinson, Ben; and Chomet, Patrick, 6,340,948, Cl. 342-373.000.

Multi-Tech Systems, Inc.: *See*—
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Munch, Carl A.: *See*—
Foo, Chek-Peng; Munch, Carl A.; Cash, Steven M.; DeZorzi, Timothy; Khairallah, Farid; Cooper, Stephen R. W.; Yeh, Huahn-Fern; and Sumner, Paul Leo, 6,341,252, Cl. 701-45.000.
Mund, Manfred; Haines, Michael; Iding, Michael; Forche, Torsten; Terorde, Stefan; Theele, Bernd-Rudiger; Holt, John-Adrian; and Lindemann, Heinz-Peter, to W. Schlafhorst AG & Co. Method for operating an automatic cheese winder when changing batches. 6,340,131, Cl. 242-474.000.
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Munson, Jonathan P.: *See*—
Doganata, Yurdaer Nezihi; Marconcini, Franco; Mourad, Magda Mahmoud; Munson, Jonathan P.; Pacifici, Giovanni; and Tantawi, Asser Nasreldin, 6,341,314, Cl. 709-229.000.
Munson, Kenneth K., to Rise Technology Company. Parallel processing instructions routed through plural differing capacity units of operand address generators coupled to multi-ported memory and ALUs. 6,341,343, Cl. 712-21.000.
Munteanu, Violeta F.: *See*—
Lane, Donald R.; Melendez, Jose A.; Munteanu, Violeta F.; and Kinney, Frederick D., 6,340,438, Cl. 252-387.000.
Muraguchi, Ryo; Nakashima, Akira; Tonai, Atsushi; Kimatsu, Michio; Machida, Katsuyuki; Kyuragi, Hakaru; and Imai, Kazuo, to Catalysts & Chemicals Industries Co., Ltd.; and Nippon Telegraph and Telephone Corporation. Substrate flattening method and film-coated substrate made thereby. 6,340,641, Cl. 438-763.000.
Murai, Tatsuhiko; and Furukawa, Tadahiro, to Kyodo Printing Co., Ltd. Photosensitive resin composition, method of forming patterns, photosensitive liquid for forming colored images, and color filter. 6,340,545, Cl. 430-7.000.
Murakami, Takeshi: *See*—
Matsuhisa, Akira; Murakami, Takeshi; Sakuda, Shuichi; Kawano, Noriyuki; Shibasaki, Kumiko; and Tanaka, Akihiro, 6,340,678, Cl. 514-213.010.
Muralidhran, N.; and Torkelson, John, to BancTec, Inc. Method for communicating and controlling transactions between unsecured parties. 6,341,351, Cl. 713-201.000.
Muranaka, Seiji; Tanaka, Hiroshi; and Hori, Yoshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Resist peeling system and control method of a resist peeling solution. 6,340,253, Cl. 396-611.000.
Murata Manufacturing Co., Ltd.: *See*—
Kuroda, Katsuhito; Ishihara, Jinsei; and Kato, Hideyuki, 6,340,921, Cl. 333-134.000.
Mouri, Akira; Nakagawa, Kiyoyuki; and Fukuda, Kenichi, 6,340,088, Cl. 206-720.000.
Toyota, Yuji; Koshido, Yoshihiro; and Hasegawa, Masayuki, 6,340,635, Cl. 438-670.000.
Murata, Shigemi: *See*—
Hamada, Kazuya; Morita, Shingo; Murata, Shigemi; and Koiwa, Mitsuru, 6,340,303, Cl. 439-127.000.
Murata, Shintaro; Honda, Tatsuyuki; Kondo, Toshihiro; and Kamimura, Teruki, to Fuji Machine Mfg. Co., Ltd.; and Techno21Group Corporation. Apparatus for breaking chips and system for treating chips. 6,340,125, Cl. 241-47.000.
Murayama, Masayuki; and Ozawa, Haruo, to Nikon Corporation. Projection exposure apparatus. 6,341,006, Cl. 355-53.000.
Murayama, Toshiyuki: *See*—
Saito, Takao; Murayama, Toshiyuki; Matsumoto, Takaji; and Miura, Takashi, 6,340,751, Cl. 540-200.000.
Murohashi, Tetsuaki: *See*—
Mizuno, Hiroshi; Kinoshita, Osamu; Murohashi, Tetsuaki; Ueno, Akihisa; Sakuma, Yoshifumi; and Amberiadis, Kostas, 6,340,434, Cl. 216-38.000.
Murowaki, Toru; Yagura, Toshiaki; Nakano, Yoshitaka; and Iida, Taku, to Denso Corporation. Electronic control unit having drive element and control processing element. 6,341,066, Cl. 361-707.000.
Murray, David Logan; Jones, Allan Scott; and Hale, Wesley R., to Eastman Chemical Company. Silicone polymer diol compositions and condensation polymer/silicone polymer blends. 6,340,726, Cl. 524-731.000.
Murray, Rex E.; Mawson, Simon; Szul, John F.; Erickson, Kersten Anne; Kwack, Tae Hoon; Karol, Frederick J.; and Schreck, David James, to Univation Technologies, LLC. Multiple catalyst system. 6,340,730, Cl. 526-114.000.
Musco Corporation: *See*—
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Mycogen Corporation: *See*—
Cardineau, Guy A.; Stelman, Steven J.; and Narva, Kenneth E., 6,340,593, Cl. 435-412.000.
Myung, Doo-nam: *See*—
Cha, Jae-jin; and Myung, Doo-nam, 6,339,873, Cl. 29-783.000.
N.M.F. Ltd.: *See*—
Natapov, Vladimir, 6,339,959, Cl. 73-239.000.
N/Amp Company, Inc.: *See*—
Pordy, William, 6,340,189, Cl. 296-1.100.
Nadano, Ryo: *See*—
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Nadeau, Rock: *See*—
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Naegele, Dieter: *See*—
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Nagai, Hideyasu: *See*—
Ueno, Masaki; Nagai, Hideyasu; Sawasaki, Tatsuo; and Hikami, Fuminori, 6,340,533, Cl. 428-611.000.
Nagai, Hisao: *See*—
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Nagai, Kazunori: *See*—
Isoyama, Shigeru; Hirabayashi, Takeshi; Yamasaki, Takahiro; Kagawa, Takushi; Nagai, Kazunori; Ishibashi, Naohiko; and Okai, Takashi, 6,340,108, Cl. 228-102.000.
Nagai, Kentaro, to Yazaki Corporation. Connector and set of connectors. 6,340,316, Cl. 439-701.000.
Nagai, Makoto: *See*—
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Nagamura, Yoshikazu; Suzuki, Kazuhito; Hosono, Kunihiro; and Yoshioka, Nobuyuki, to Mitsubishi Denki Kabushiki Kaisha; and Ryoden Semiconductor System Engineering Corporation. Photomask, manufacturing method thereof, and semiconductor device. 6,340,543, Cl. 430-5.000.
Naganawa, Ryuichi; Noda, Kazutoshi; Tao, Hiroaki; and Tominaga, Mamoru, to Secretary of Agency of Industrial Science and Technology. Method of analyzing concentration of target substance using quartz oscillator and device therefor. 6,339,954, Cl. 73-61.790.
Nagano, Shuji: *See*—
Tabata, Atsushi; Taga, Yutaka; Ibaraki, Ryuji; Nagano, Shuji; Nakamura, Seiji; and Amano, Masaya, 6,340,339, Cl. 475-5.000.
Nagaoka, Hiroshi: *See*—
Higashijima, Yasuhisa; Terada, Yukihiro; and Nagaoka, Hiroshi, 6,340,880, Cl. 320-162.000.
Nagasaka, Akio; Miyatake, Takafumi; Fujita, Takehiro; Taniguchi, Katsumi; and Tanaka, Kazuaki, to Hitachi, Ltd. Method and apparatus for detecting and displaying a representative image of a shot of short duration in a moving image. 6,341,168, Cl. 382-107.000.
Nagasaka, Yasushi: *See*—
Takeshita, Kenji; Kohsaka, Jun; and Nagasaka, Yasushi, 6,341,030, Cl. 359-216.000.
Nagasawa, Toshiya: *See*—
Makihara, Masamichi; Kuroyanagi, Isao; Nagasawa, Toshiya; and Torigoe, Eiichi, 6,339,937, Cl. 62-503.000.
Yamauchi, Yoshiyuki; Yamamoto, Ken; Kobayashi, Osamu; Ohta, Minoru; and Nagasawa, Toshiya, 6,340,055, Cl. 165-174.000.
Nagase & Co., Ltd.: *See*—
Maruoka, Keiji, 6,340,753, Cl. 540-543.000.
Nagashima, Hiroshi, to Shima Seiki Manufacturing, Ltd. Three-dimensional image processing apparatus with bump image modification. 6,340,974, Cl. 345-584.000.
Nagashima, Katsushi, to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho. Shift lever apparatus. 6,339,968, Cl. 74-473.250.
Nagashima, Kazuo: *See*—
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Nagashima, Osamu: *See*—
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Nagashima, Yukihito; Kawazu, Mitsuhiro; and Tsujino, Toshifumi, to Nippon Sheet Glass Co., Ltd. Colored film-coated ultraviolet/infrared absorbent glass plate and window glass of vehicle. 6,340,646, Cl. 501-64.000.
Nagatomi, Tsutomu: *See*—
Taira, Yoshihiko; Houki, Youji; Nakayasu, Hirofumi; and Nagatomi, Tsutomu, 6,340,982, Cl. 347-130.000.
Nagaya, Hidehiko; and Shimomura, Hiroshi, to Mitsubishi Materials Corporation. Cutting tool and shrink fitting method for the same. 6,339,868, Cl. 29-447.000.
Nagaya, Hidehiko: *See*—
Shimomura, Hiroshi; and Nagaya, Hidehiko, 6,340,274, Cl. 407-34.000.
Nagoya, Takao: *See*—
Ishiwata, Hiroyuki; Kabeya, Mototsugu; Shigyo, Hiromichi; Shiratsuchi, Masami; Hattori, Yukio; Nakao, Hiroshi; Nagoya, Takao; Sato, Seiichi; Oda, Soichi; Suda, Makoto; and Shibasaki, Manabu, 6,340,682, Cl. 514-235.800.
Nagumo, Atsuro: *See*—
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Naito, Masahiko: *See*—
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Naito, Takuya: *See*—
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Naka, Hiroshi: *See*—
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Naka, Michiharu: *See*—

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Nakada, Masafumi; Tsuge, Hisanao; Tsukamoto, Yuji; Matsutera, Hisao; Ishiwata, Nobuyuki; and Kamijo, Atsushi, to NEC Corporation. Magnetic tunnel junction elements and their fabrication method. 6,341,053, Cl. 360-324.200.

Nakae, Makoto; and Sugiyama, Tomio, to Denso Corporation. Multilayered air-fuel ratio sensing element. 6,340,419, Cl. 204-429.000.

Nakagawa, Kiyoyuki: *See*—
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Nakagawa, Satoshi: *See*—
Yamaguchi, Satoshi; Nakagawa, Satoshi; Mitsui, Sunao; and Ohno, Susumu, 6,340,539, Cl. 429-213.000.

Nakagawa, Toshiyuki, to Sony Corporation. Demodulating device, demodulating method and supply medium with predetermined error length. 6,340,938, Cl. 341-58.000.

Nakagawa, Yukito; and Takagi, Ken'ichi, to Anelva Corporation. Plasma processing apparatus. 6,339,997, Cl. 118-723.0AN.

Nakagawa, Yusuke: *See*—
Nakanishi, Noriko; Yamamoto, Hisayo; Niwa, Keisuke; Yokota, Miho; Nakagawa, Yusuke; and Tsubouchi, Takao, 6,340,178, Cl. 281-45.000.

Nakajima, Hajime; and Ruther, Patrick, to Mitsubishi Denki Kabushiki Kaisha; and Forschungszentrum Karlsruhe GmbH. Optical axis conversion lens. 6,341,043, Cl. 359-625.000.

Nakajima, Kichio: *See*—
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Nakamizo, Kenzi: *See*—
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Nakamura, Akihiko: *See*—
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Nakamura, Akio, to Oki Electric Industry Co., Ltd. Semiconductor device in a recess of a semiconductor plate. 6,340,842, Cl. 257-724.000.

Nakamura, Akira: *See*—
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Nakamura, Hideki; and Mawatari, Shohei, to Senju Metal Industry Co., Ltd. Method and apparatus for soldering printed circuit boards and cooling mechanism for a soldering apparatus. 6,340,110, Cl. 228-179.100.

Nakamura, Hidenori: *See*—
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Nakamura, Karl S.: *See*—
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Nakamura, Kazuhiko: *See*—
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Nakamura, Kozo: *See*—
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Nakamura, Makoto: *See*—
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Nakamura, Norinaga: *See*—
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Nakamura, Ryouta: *See*—
Kinoshita, Kenji; Ishihara, Hideki; Kurimoto, Akira; Matsuzaki, Haruki; Yamamoto, Ryoichi; Yoshida, Akihiro; Nakamura, Ryouta; Kobayashi, Toshiki; and Katsuro, Hajime, 6,341,063, Cl. 361-690.000.

Nakamura, Seiji: See—
Tabata, Atsushi; Taga, Yutaka; Ibaraki, Ryuji; Nagano, Shuji; Nakamura, Seiji; and Amano, Masaya, 6,340,339, Cl. 475-5.000.

Nakamura, Setsuo: *See*—
Segawa, Teruo; Matsubara, Jyun; Okuyama, Kaoru; Ueda, Yukihide; Takahashi, Shyouichi; Nakamura, Setsuo; Urakami, Kazuo; and Kishita, Shin, 6,339,874, Cl. 29-824.000.

Nakamura, Takahiro, to Matsushita Electric Industrial Co., Ltd. γ Correction system and method utilizing graph approximation. 6,340,996, Cl. 348-675.000.

Nakamura, Tetsuya: See—
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Nakamura, Tomokazu: *See*—
Nishiyama, Noriyoshi; Nakamura, Tomokazu; Ikkai, Yasufumi; Ogushi, Masaki; and Kondo, Yasuhiro, 6,340,857, Cl. 310-156.530.

Nakane, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Light beam condensing apparatus and method of driving optical recording medium by applying the apparatus. 6,341,105, Cl. 369-44.270.

Nakanishi, Hiromi: *See*—
Kuhara, Yoshiki; Nakanishi, Hiromi; and Terauchi, Hitoshi, 6,340,831, Cl. 257-461.000.

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Huotari, Seppo, 6,341,221, Cl. 455-414.000.

Nokia Telecommunications Oy: *See—*
Hurme, Jaana, 6,341,220, Cl. 455-410.000.

Nomoto, Hiroki: *See—*
Sato, Satoshi; and Nomoto, Hiroki, 6,340,150, Cl. 251-298.000.

Nomoto, Shinichi: *See—*
Munoz-Garcia, Samuel; Nomoto, Shinichi; Poskett, Peter; Mullins, Dennis; Hutchinson, Ben; and Chomet, Patrick, 6,340,948, Cl. 342-373.000.

Nonvolatile Electronics, Incorporated: *See—*
Daughton, James M.; and Pohm, Arthur V., 6,340,886, Cl. 324-252.000.

Noolandi, Jaan: *See—*
Peeters, Eric; Noolandi, Jaan; Apte, Raj B.; Floyd, Philip D.; Small, Jonathan A.; Kovacs, Gregory J.; Lean, Meng H.; Volkel, Armin R.; Bolte, Steven B.; Shi, An-Chang; Endicott, Frederick J.; Anderson, Gregory B.; Hays, Dan A.; Kubby, Joel A.; Jackson, Warren B.; Moffat, Karen A.; McAneney, T. Brian; Veregin, Richard P. N.; McDougall, Maria N. V.; Boils, Danielle C.; and Szabo, Paul D., 6,340,216, Cl. 347-21.000.

Nooyen, Michael: *See—*
Fahs, Kenneth; Sullivan, David; and Nooyen, Michael, 6,339,912, Cl. 53-412.000.

Norcini, Gabriele: *See—*
Napoletano, Mauro; Norcini, Gabriele; Grancini, Giancarlo; Pellacini, Franco; and Morazzoni, Gabriele, 6,340,684, Cl. 514-248.000.

Nord, Eric: *See—*
Socha, Greg; Maynard, Doug; and Nord, Eric, 6,339,855, Cl. 5-93.100.

Norgauer, Rainer: *See—*
Benedikt, Walter; Rieger, Franz; and Norgauer, Rainer, 6,340,015, Cl. 123-297.000.

Norlander, Leif, to Stora Kopparbergs Bergslags Aktiebolag (Publ). Method of preparation of a fluffed pulp to be used in absorbent products, 6,340,408, Cl. 162-20.000.

Noro, Masahiko: *See—*
Hashitani, Ryuki; Wakao, Takeshi; Noro, Masahiko; Nagai, Hisao; and Okada, Kouji, 6,340,721, Cl. 524-109.000.

Nortel Networks Limited: *See—*
Beaton, Brian Finlay; Smith, Colin Donald; Blouin, Francois; Comeau, Guillaume; and Craddock, Arthur Julian Patterson, 6,340,979, Cl. 345-764.000.
Gavrilovic, Milan, 6,340,914, Cl. 330-52.000.

North, Anne: *See—*
Bollag, Gideon; Crompton, Anne; North, Anne; Roscoe, William; and Sharma, Sanju, 6,340,575, Cl. 435-69.100.

Northrop Grumman Corporation: *See—*
Smith, Carl R.; Madura, Jeffrey R.; and Kramer, Jesse J., 6,340,796, Cl. 174-255.000.

Northwestern University: *See—*
Ho, Seng-Tiong; and Chin, Mee Koy, 6,341,184, Cl. 385-3.000.

Nosowitz, Martin: *See—*
Bonardi, Christian; Hebrard, Pierre; Peres, Richard; Malone, Kenneth; Nosowitz, Martin; Mendolia, Michael; Callais, Peter; Stainbrook, Barbara; and Lou, Jianfeng, 6,340,729, Cl. 526-83.000.

Notoya, Kohei: *See—*
Marui, Shogo; Hazama, Masatoshi; Notoya, Kohei; and Kato, Koki, 6,340,704, Cl. 514-463.000.

Nova Chemicals (International) S. A.: *See—*

Hoang, Peter Phung Minh; Jeremic, Dusan; Kearns, Jason Roy; Coulter, Iain McLaren; and Donaldson, Robert D., 6,340,771, Cl. 556-171.000.
Huang, James Chin-Kuang; Sipos, Peter Andrew; Kale, Lawrence Thomas; Thomas, Patrick R.; and Auger, James Arthur, 6,340,532, Cl. 428-523.000.
Nova, Michael P.; and Potash, Hanan, to Discovery Partners International, Inc. Matrices with memories. 6,340,588, Cl. 435-287.100.
Novak, John I., III: *See—*
Chang, Donald C. D.; Yung, Kar W.; Novak, John I., III; and Goliff, William, 6,340,947, Cl. 342-357.010.
Novartis AG: *See—*
Ghisalba, Oreste; Marais, Guy Joel Christian; and Martin, Pierre, 6,340,754, Cl. 544-244.000.
Novell, Inc.: *See—*
Vaid, Aseem; and Sawhney, Sanjay, 6,341,309, Cl. 709-223.000.
Novellus Systems, Inc.: *See—*
Van Cleemput, Patrick A.; Laxman, Ravi Kumar; Shu, Jen; Schulberg, Michelle T.; and Nie, Bunsen, 6,340,628, Cl. 438-586.000.
Novo Nordisk A/S: *See—*
Poulsen, Jens Ulrik; Ljunggreen, Henrik; and Christensen, Lars Hofmann, 6,340,357, Cl. 604-208.000.
Novogen, Inc.: *See—*
Kelly, Graham E., 6,340,703, Cl. 514-456.000.
Nowak, David: *See—*
Cummings, Thomas A.; Nowak, David; and Chang, Byung Jin, 6,340,228, Cl. 351-136.000.
Nozawa, Kenji; Ainoya, Masayuki; Fujinuma, Yoshitaka; and Suzuki, Yuichiro, to Hitachi Koki Co., Ltd. Toner cartridge. 6,341,210, Cl. 399-262.000.
NSK Ltd.: *See—*
Fujita, Yasunobu; Yamamoto, Masao; Hachiya, Kouichi; Yokouchi, Atsushi; Yabe, Toshikazu; Shiraishi, Emiko; and Naka, Michiharu, 6,340,244, Cl. 384-462.000.
Yamamoto, Kazuo; Hashimoto, Yoshito; and Fukunaga, Masanao, 6,340,209, Cl. 297-478.000.
NTT Mobile Communications Network, Inc.: *See—*
Dohi, Tomohiro; Seo, Syunsuke; Okumura, Yukihiko; and Sawahashi, Mamoru, 6,341,224, Cl. 455-522.000.
Numata, Hideaki; and Takeda, Kouichi, to NEC Corporation. Magnetic random access memory circuit. 6,341,084, Cl. 365-158.000.
Nye, Jeff, to Starwave Corporation. Method and apparatus for event modeling. 6,341,279, Cl. 707-3.000.
Oak, Sang Soo; Song, Woo Jin; and Lee, Kwang Chun, to LG Electronics Inc. Maximum likelihood symbol timing estimator. 6,341,147, Cl. 375-341.000.
Oak Technology, Inc.: *See—*
deCarmo, Linden A., 6,341,330, Cl. 711-113.000.
Object Technology Licensing Corp: *See—*
Hennessey, Wade, 6,341,293, Cl. 707-206.000.
Obukowicz, Mark; Kabakibi, Ayman; Green, Susan L.; Olson, Lisa M.; and Lindemann, Julie, to Monsanto Technology, LLC. Use of α-linolenic acid metabolites for treatment or prevention of cancer. 6,340,705, Cl. 514-560.000.
Occella, Sergio: *See—*
Malatto, Dante Rodolfo; Losano, Fiorello; Occella, Sergio; and Patrone, Vladimiro, 6,340,006, Cl. 123-41.290.
Océ Printing Systems GmbH: *See—*
Beiss, Max; and Dietl, Joseph, 6,340,212, Cl. 312-223.300.
Ochiai, Masami: *See—*
Udagawa, Tsutomu; Igarashi, Teruo; Ochiai, Masami; Sakai, Toshimi; Ishida, Kazuhisa; and Funato, Kouji, 6,339,929, Cl. 60-468.000.
Ochiai, Toshiyuki; Furukawa, Yosuke; Tanaka, Yutaka; Kimura, Kozo; Hirai, Makoto; Kiyohara, Tokuzo; and Nishida, Hideshi, to Matsushita Electric Industrial Co., Ltd. Memory control unit and memory control method and medium containing program for realizing the same. 6,340,973, Cl. 345-534.000.
Ochomogo, Maria G.: *See—*
Deleo, Malcolm A.; Blum, Robert L.; Ochomogo, Maria G.; Pappalardo, Paul A.; and Swayne, Elizabeth N., 6,340,663, Cl. 510-438.000.
O' Connor, John; and Fu, Qiang, to Quantronix Corporation. Laser delivery system and method for photolithographic mask repair. 6,341,009, Cl. 355-67.000.
Oda, Kazuya, to Fuji Photo Film Co., Ltd. Monitoring method with a CCD imaging device and digital still camera using the same. 6,340,989, Cl. 348-246.000.
Oda, Soichi: *See—*
Ishiwata, Hiroyuki; Kabeya, Mototsugu; Shigyo, Hiromichi; Shiratsuchi, Masami; Hattori, Yukio; Nakao, Hiroshi; Nagoya, Takao; Sato, Seiichi; Oda, Soichi; Suda, Makoto; and Shibasaki, Manabu, 6,340,682, Cl. 514-235.800.
Oda, Toshiaki, to NEC Corporation. Memory package implementing two-fold memory capacity and two different memory functions. 6,340,845, Cl. 257-777.000.
Oerlikon Contraves AG: *See—*
Mannhart, Peter, 6,339,983, Cl. 89-33.160.
O' Farrell, Desmond J.; Veldman, Roger L.; and Schofield, Kenneth, to Donnelly Corporation. Vehicle mirror digital network and dynamically interactive mirror system. 6,340,850, Cl. 307-10.100.
Ofek, Yuval: *See—*
Schreiber, Moshe; Kedem, Ishay; Ofek, Yuval; Vishlitzky, Natan; and Shagam, Eli, 6,341,333, Cl. 711-114.000.
Ofer, Erez: *See—*
D'Errico, Matthew J.; Blumenau, Steven M.; and Ofer, Erez, 6,341,317, Cl. 710-15.000.
Offenbacher, Helmut: *See—*
Ghahramani, Massoud; Offenbacher, Helmut; and Ritter, Christoph, 6,340,714, Cl. 521-88.000.
Ogasawara, Masato: *See—*
Sasagawa, Gouki; Nakamura, Tetsuya; and Ogasawara, Masato, 6,340,515, Cl. 428-192.000.
Ogawa, Koichi: *See—*
Teraoka, Toshihiro; Ishizaki, Toshio; Ogawa, Koichi; and Maekawa, Tomoya, 6,340,953, Cl. 343-776.000.
Ogawa, Noriyoshi; Kanagawa, Tatsuya; and Nakatani, Hidekazu, to Mitsubishi Gas Chemical Company, Inc. Polycarbonate resin and optical article used the same. 6,340,737, Cl. 528-196.000.
Ogawa, Osamu: *See—*
Tanaka, Hiroaki; Ogawa, Osamu; Kajitani, Yoshimi; Takakuwa, Kei; Ohshima, Toshiki; Mizuno, Katsutoshi; Ino, Naohito; and Ishihara, Shigeo, 6,339,967, Cl. 74-409.000.
Ogawa, Shingo, to Honda Tsushin Kogyo Co., Ltd. Probe pin assembly, a method of making the same and a connector using the same. 6,340,320, Cl. 439-824.000.
Ogawa, Tsuneshi; Maruyama, Toshiharu; Kozuki, Haruya; and Ozaki, Shintaro, to Kabushiki Kaisha Kobe Seiko Sho. Flux cored wire for welding duplex stainless steel. 6,340,396, Cl. 148-23.000.
Ogawa, Yukio: *See—*
Kawasaki, Hiroaki; and Ogawa, Yukio, 6,340,865, Cl. 315-169.100.
Ogino, Akira: *See—*
Kohashi, Takashi; Ogino, Akira; Moriwaki, Hisayoshi; Kimura, Yuji; and Ikeda, Nozomu, 6,341,141, Cl. 375-137.000.
Ogle, James R.: *See—*
Bohannon, Terry L.; O'Heeron, Peter T.; Ogle, James R.; and Moser, Lawrence W., 6,340,358, Cl. 604-264.000.
Oglesbee, John Wendell, to Motorola, Inc. Silicon equivalent PTC circuit. 6,340,878, Cl. 320-150.000.
Oguchi, Mariko; Saito, Masayuki; and Miyata, Kimiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Multivision system, color calibration method and display. 6,340,976, Cl. 345-690.000.
Ogushi, Masaki: *See—*
Nishiyama, Noriyoshi; Nakamura, Tomokazu; Ikkai, Yasufumi; Ogushi, Masaki; and Kondo, Yasuhiro, 6,340,857, Cl. 310-156.530.
Oh, Cheol-gyun, to Samsung Electronics Co., Ltd. Apparatus for detecting and restoring physical identification. 6,341,111, Cl. 369-47.220.
Oh, Jae-Seung; Lee, Bun-Yeoul; Oum, Yoon-Hyeun; and Park, Tai-Ho, to LC Chemical Ltd. Method for olefin polymerization with recycling of co-catalyst. 6,340,728, Cl. 526-70.000.
O' Heeron, Peter T.: *See—*
Bohannon, Terry L.; O'Heeron, Peter T.; Ogle, James R.; and Moser, Lawrence W., 6,340,358, Cl. 604-264.000.
Ohhashi, Masao: *See—*
Fukumoto, Ryoichi; Yamada, Katsuhisa; Ohhashi, Masao; Suzuki, Shintaro; and Suzuki, Seiichi, 6,340,199, Cl. 296-155.000.
Ohkita, Koji: *See—*
Sugihara, Hideaki; and Ohkita, Koji, 6,340,041, Cl. 152-209.500.
Ohkubo, Tadatoshi: *See—*
Tsujishita, Masahiro; Ishida, Masayuki; Taura, Kenichi; Ohkubo, Tadatoshi; and Morita, Masakazu, 6,341,123, Cl. 370-210.000.
Ohkura, Tadahisa: *See—*
Hosokawa, Tetsuo; Hamamura, Toshihiro; Takahashi, Hiroyuki; Iwamoto, Shigeru; Ohkura, Tadahisa; and Kaneko, Hidefumi, 6,341,202, Cl. 396-281.000.
Ohlert, Franz; and Tietze, Hans-Joachim, to TRW Occupant Restraint Systems GmbH & Co. KG. Airbag module. 6,340,172, Cl. 280-730.200.
Ohmori, Kiyoshi: *See—*
Yoshida, Hiroshi; Ohmori, Kiyoshi; Fuse, Kensaku; Morita, Kazuhiro; Onduka, Yoshitaka; and Yokota, Naoyuki, 6,340,757, Cl. 544-319.000.
Ohmori, Masahiro; Hamanaka, Tadashi; and Nakamura, Hidenori, to Showa Denko K.K. Particles aqueous dispersion and film of titanium oxide and preparation thereof. 6,340,711, Cl. 516-79.000.
Ohno, Susumu: *See—*
Yamaguchi, Satoshi; Nakagawa, Satoshi; Mitsui, Sunao; and Ohno, Susumu, 6,340,539, Cl. 429-213.000.
Ohsawa, Kenji; and Kusano, Hidetoshi, to Sony Corporation. Lead frame and production method thereof, and semiconductor device and fabrication method thereof. 6,340,840, Cl. 257-672.000.
Ohshima, Toshiki: *See—*
Tanaka, Hiroaki; Ogawa, Osamu; Kajitani, Yoshimi; Takakuwa, Kei; Ohshima, Toshiki; Mizuno, Katsutoshi; Ino, Naohito; and Ishihara, Shigeo, 6,339,967, Cl. 74-409.000.
Ohta, Keiichiro, to Showa Denko K.K. Process for manufacturing heat sink. 6,339,880, Cl. 29-890.030.
Ohta, Kenichi, to Canon Kabushiki Kaisha. Method and apparatus for processing an image. 6,341,019, Cl. 358-1.900.
Ohta, Masuyuki: *See—*
Ashizawa, Keiichiro; Hikiba, Masayuki; and Ohta, Masuyuki, 6,341,003, Cl. 349-141.000.
Kondo, Katsumi; Terao, Hiromu; Abe, Hidetoshi; Ohta, Masuyuki; Suzuki, Kenkichi; Sasaki, Tohru; Kawachi, Genshiro; and Ohwada, Junichi, 6,341,004, Cl. 349-141.000.
Ohta, Minoru: *See—*
Yamauchi, Yoshiyuki; Yamamoto, Ken; Kobayashi, Osamu; Ohta, Minoru; and Nagasawa, Toshiya, 6,340,055, Cl. 165-174.000.

Ohtsu, Motoichi: *See*—
Tominaga, Junji; Nakano, Takashi; Atoda, Nobufumi; Kourogi, Motonobu; and Ohtsu, Motoichi, 6,340,813, Cl. 250-216.000.
Ohtsu, Shigemi: *See*—
Akutsu, Eiichi; Ohtsu, Shigemi; and Pu, Lyong Sun, 6,340,544, Cl. 430-7.000.
Ohtsuka, Hisashi; and Okazaki, Yoji, to Fuji Photo Film Co., Ltd. Semiconductor-laser-pumped solid state laser. 6,341,139, Cl. 372-107.000.
Ohtsuka, Yoshihiro: *See*—
Enna, Genichirou; Fukuda, Hiroki; and Ohtsuka, Yoshihiro, 6,340,779, Cl. 568-615.000.
Ohwada, Junichi: *See*—
Kondo, Katsumi; Terao, Hiromu; Abe, Hidetoshi; Ohta, Masuyuki; Suzuki, Kenkichi; Sasaki, Tohru; Kawachi, Genshiro; and Ohwada, Junichi, 6,341,004, Cl. 349-141.000.
Oishi, Masuya; Konishi, Teruaki; Yotoriyama, Hiroaki; and Iguchi, Tadashi, to Namco Ltd. Game machine and information storage medium. 6,340,330, Cl. 463-8.000.
Oishi, Seiichiro: *See*—
Takeda, Ryuji; Oishi, Seiichiro; and Shiomi, Tetsuhiro, 6,341,103, Cl. 369-32.000.
Oka, Motohiro; Tsuchiya, Mitsuru; Nakamura, Norinaga; Takematus, Kiyotaka; Ota, Yurie; Suzuki, Hiroko; Yamashita, Natsuko; and Katagiri, Hiroomi, to Dai Nippon Printing Co., Ltd. Optical functional materials and process for producing the same. 6,340,404, Cl. 156-230.000.
Okabe, Tadashi: *See*—
Ueno, Kohshi; Sasaki, Atsushi; Kawano, Koki; Okabe, Tadashi; Kitazawa, Noritaka; Takahashi, Keiko; Yamamoto, Noboru; Suzuki, Yuichi; Matsunaga, Manabu; and Kubota, Atsuhiko, 6,340,759, Cl. 544-358.000.
Okada, Hiroyuki: *See*—
Yamakawa, Hiroshi; Okada, Hiroyuki; and Watanabe, Nobuo, 6,341,283, Cl. 707-5.000.
Okada, Kouji: *See*—
Hashitani, Ryuki; Wakao, Takeshi; Noro, Masahiko; Nagai, Hisao; and Okada, Kouji, 6,340,721, Cl. 524-109.000.
Okada, Lynne A.: *See*—
Bertrand, Jacques; Dick, Barry; Wang, Shu Tsai; Ou, Weiwen; Okada, Lynne A.; and Chu, Yen C., 6,340,395, Cl. 134-2.000.
Okada, Mitsumasa; Sugai, Toshiya; Honda, Yoshitaka; Ishikawa, Manabu; and Sakurai, Tomohisa, to Olympus Optical Co., Ltd. Ultrasound treatment system. 6,340,352, Cl. 601-2.000.
Okada, Tomoyuki; Mori, Yoshihiro; Tsuga, Kazuhiro; Hamasaka, Hiroshi; Ishihara, Hidesbi; Nakamura, Kazuhiko; and Hasebe, Takumi, to Matsushita Electric Industrial Co., Ltd. Apparatus, method, and recording medium implementing audio gap information for an audio presentation discontinuous period. 6,341,199, Cl. 386-98.000.
Okai, Takashi: *See*—
Isoyama, Shigeru; Hirabayashi, Takeshi; Yamasaki, Takahiro; Kagawa, Takushi; Nagai, Kazunori; Ishibashi, Naohiko; and Okai, Takashi, 6,340,108, Cl. 228-102.000.
Okamuro, Toshihiko: *See*—
Watanabe, Kazuo; Okamuro, Toshihiko; Inoue, Toshiyasu; and Yoshida, Hiroshi, 6,340,157, Cl. 271-301.000.
Okawa, Koji; Kashiwazaki, Takao; Kubota, Shuichi; Endo, Tadashi; Tanino, Masato; and Kabeshita, Akira, to Matsushita Electric Industrial Co., Ltd. Electronic component feeding device. 6,340,132, Cl. 242-566.000.
Okawara, Hiroshi: *See*—
Anno, Kouichi; Matsuda, Masaaki; Kawamura, Tetsuya; Okawara, Hiroshi; and Tanaka, Takeshi, 6,340,963, Cl. 345-92.000.
Okazaki, Sadayuki: *See*—
Kamiyama, Toshifumi; Kunieda, Toshiaki; and Okazaki, Sadayuki, 6,340,501, Cl. 427-255.600.
Okazaki, Yoji: *See*—
Ohtsuka, Hisashi; and Okazaki, Yoji, 6,341,139, Cl. 372-107.000.
Okazawa, Koichi: *See*—
Kondo, Nobukazu; Kaneko, Seiji; Okazawa, Koichi; Gemma, Hideaki; Mochida, Tetsuya; and Hayashi, Takehisa, 6,341,323, Cl. 710-129.000.
Oki Electric Industry Co., Ltd.: *See*—
Hirayama, Koji, 6,340,919, Cl. 331-78.000.
Nakamura, Akio, 6,340,842, Cl. 257-724.000.
Noguchi, Hidekazu, 6,341,086, Cl. 365-189.050.
Shibuya, Yoshiki; and Ushikubo, Takashi, 6,340,251, Cl. 385-89.000.
Okina, Katsumi, to Seiko Epson Corporation. Semiconductor memory device. 6,341,096, Cl. 365-220.000.
Okude, Mariko; Endo, Yoshinori; Gunji, Yasuhiro; and Nakamura, Kozo, to Xanavi Informatics Corporations. Map displaying method and apparatus, and navigation system having the map displaying apparatus. 6,341,254, Cl. 701-208.000.
Okumura, Yukihiko: *See*—
Dohi, Tomohiro; Seo, Syunsuke; Okumura, Yukihiko; and Sawahashi, Mamoru, 6,341,224, Cl. 455-522.000.
Okuyama, Kaoru: *See*—
Segawa, Teruo; Matsubara, Jyun; Okuyama, Kaoru; Ueda, Yukihide; Takahashi, Shyouichi; Nakamura, Setsuo; Urakami, Kazuo; and Kishita, Shin, 6,339,874, Cl. 29-824.000.
Okuyama, Masatoshi; Sumiyama, Masahide; Okuzawa, Kazurou; and Fujii, Mutsufumi, to Matsushita Electric Industrial Co., Inc. Speaker. 6,341,167, Cl. 381-407.000.
Okuzawa, Kazurou: *See*—
Okuyama, Masatoshi; Sumiyama, Masahide; Okuzawa, Kazurou; and Fujii, Mutsufumi, 6,341,167, Cl. 381-407.000.
Oliner, Jonathan D.; and Hubbell, Earl, to Affymetrix, Inc. Determining signal transduction pathways. 6,340,565, Cl. 435-6.000.
Oliver, Eddie James, Jr.: *See*—
Anderson, Frank Elbert, III; Brown, Jonathan Miles; Coughlin, Philip Edward; Homans, Steven William; Weller, Charles Tobias; Zimmerman-Wilson, Carrie Ann; and Oliver, Eddie James, Jr., 6,340,578, Cl. 435-71.100.
Olsen, Jeff P.; and Gambino, Joseph. Portable fight ring. 6,340,334, Cl. 472-93.000.
Olson, Lisa M.: *See*—
Obukowicz, Mark; Kabakibi, Ayman; Green, Susan L.; Olson, Lisa M.; and Lindemann, Julie, 6,340,705, Cl. 514-560.000.
Olson, Ward: *See*—
Rosebrugh, Robert; and Olson, Ward, 6,340,190, Cl. 296-26.110.
Olsson, Mats: *See*—
Möster, Erik; Larsson, Paul; Olsson, Mats; Simonsson, Olof; Larsson, Mats; and Portela, Rafael, 6,341,227, Cl. 455-550.000.
Olympus Optical Co., Ltd.: *See*—
Miura, Yasutada; and Hisata, Nahoko, 6,341,035, Cl. 359-363.000.
Okada, Mitsumasa; Sugai, Toshiya; Honda, Yoshitaka; Ishikawa, Manabu; and Sakurai, Tomohisa, 6,340,352, Cl. 601-2.000.
Omoda, Daisuke: *See*—
Miyaki, Yoshinori; Suzuki, Kazunari; and Omoda, Daisuke, 6,340,837, Cl. 257-666.000.
Omura, Masatoshi: *See*—
Yamashita, Akira; and Omura, Masatoshi, 6,340,012, Cl. 123-195.00C.
Onda, Kanichi: *See*—
Nakanishi, Kazuhiro; Takano, Kunikazu; Kibayashi, Hiroshi; Nakanishi, Hiromi; Takaba, Tetsufumi; Hiroshima, Wataru; Takeda, Tsuyoshi; Aoki, Akira; and Onda, Kanichi, 6,341,200, Cl. 396-6.000.
Onduka, Yoshitaka: *See*—
Yoshida, Hiroshi; Ohmori, Kiyoshi; Fuse, Kensaku; Morita, Kazuhiro; Onduka, Yoshitaka; and Yokota, Naoyuki, 6,340,757, Cl. 544-319.000.
Onetta Inc.: *See*—
Sun, Yan; and Ye, Jun, 6,341,034, Cl. 359-341.410.
Ono, Kinya, to Riso Kagaku Corporation. Image forming apparatus with an impelling roller to be pressed against a platen roller. 6,340,254, Cl. 400-120.160.
Ono, Koji: *See*—
Fukuda, Tetsuya; Nishimura, Takahiro; Sato, Jun; Ono, Koji; Nishimoto, Takumi; Ishihara, Yukihiro; and Sawada, Masaki, 6,340,801, Cl. 200-18.000.
Onyx Pharmaceuticals, Inc.: *See*—
Bollag, Gideon; Crompton, Anne; North, Anne; Roscoe, William; and Sharma, Sanju, 6,340,575, Cl. 435-69.100.
Oomori, Katsumi; Yukawa, Hiroto; Yamazaki, Akiyoshi; Tani, Kazuo; Kinoshita, Yohei; and Yamada, Tomotaka, to Tokyo Ohka Kogyo Co., Ltd. Positive-working photoresist composition. 6,340,553, Cl. 430-270.100.
OPE, Inc.: *See*—
Hull, Tommy Lee, 6,340,273, Cl. 405-227.000.
Optical Coating Laboratory, Inc.: *See*—
Bryan, Brett J.; Greenberg, Michael R.; and Sullivan, Sean, 6,340,230, Cl. 353-31.000.
Optrex Corporation: *See*—
Nakazawa, Akira; Kitamura, Masakazu; Tamai, Kiyoshi; and Nagai, Makoto, 6,340,964, Cl. 345-100.000.
Oracle Corporation: *See*—
Rhee, Ann; Chatterjee, Sumanta K.; Loaiza, Juan R.; and Srinivasan, Kesavan, 6,341,303, Cl. 709-104.000.
Tsukerman, Alex; Ngai, Gary C.; Putzolu, Gianfranco; and Lee, J. William, 6,341,340, Cl. 711-150.000.
O' Reilly, Joseph, to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.). Use of a flavonoid extract of ginkgo biloba substantially devoid of terpenes, in the dentibuccal field, and composition containing such extract. 6,340,456, Cl. 424-48.000.
Orenga, Sylvain: *See*—
Armstrong, Lyle; James, Arthur; Monget, Daniel; and Orenga, Sylvain, 6,340,573, Cl. 435-18.000.
Orion Corporation: *See*—
Bäckström, Reijo; Heinonen, Tuula; and Hauta-Aho, Tuula, 6,340,764, Cl. 549-321.000.
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Noe, Maxy; Beslu, Pierre; Brachet, Jean-Christophe; Parmentier, Philippe; and Porta, Jacques, 6,340,536, Cl. 428-660.000.

Portela, Rafael: *See—*
Möster, Erik; Larsson, Paul; Olsson, Mats; Simonsson, Olof; Larsson, Mats; and Portela, Rafael, 6,341,227, Cl. 455-550.000.

Porter, Simon J.; Moulton, Jeffrey D.; and Altizer, Lance R., to Honeywell International Inc. Matte coextruded nylon film for book covers. 6,340,530, Cl. 428-474.400.

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Poskett, Peter: *See—*
Munoz-Garcia, Samuel; Nomoto, Shinichi; Poskett, Peter; Mullins, Dennis; Hutchinson, Ben; and Chomet, Patrick, 6,340,948, Cl. 342-373.000.

Potash, Hanan: *See—*
Nova, Michael P.; and Potash, Hanan, 6,340,588, Cl. 435-287.100.

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Potter, Terry C.; Potter, Andrew E.; and Hatas, Peter J., 6,339,952, Cl. 73-40.000.

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Premark RWP Holdings, Inc.: *See—*
Beierman, Dennis M.; and Hubbard, John K., 6,340,044, Cl. 156-443.000.
Nelson, Thomas J., 6,340,264, Cl. 403-297.000.

Prenger, Mark W.: *See—*
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PricePoint, Incorporated: *See—*
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Camden, James Berger, 6,340,696, Cl. 514-361.000.
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Tzeng, A-Shui, 6,340,146, Cl. 248-317.000.

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Bueschken, Wilfried; Wiese, Klaus-Diether; Protzmann, Guido; and Koch, Juergen, 6,340,778, Cl. 568-463.000.

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Akutsu, Eiichi; Ohtsu, Shigemi; and Pu, Lyong Sun, 6,340,544, Cl. 430-7.000.

Puc, Andrej B., to TyCom (US) Inc. Multiple level modulation in a wavelength-division multiplexing (WDM) systems. 6,341,023, Cl. 359-124.000.

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Cadorette, Normand G., Jr.; Vall, Jonathan E.; and Arcentales, Miguel R., 6,341,169, Cl. 382-115.000.

Purcell, Farrell W. Weighted device for maintaining the arm in a proper position for maximizing pectoral muscle exercising. 6,340,341, Cl. 482-108.000.

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Tsukerman, Alex; Ngai, Gary C.; Putzolu, Gianfranco; and Lee, J. William, 6,341,340, Cl. 711-150.000.

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Puxley, Donald L.: *See—*
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Quantronix Corporation: *See—*
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Quigley, Richard J.: See—
Meyer, Jon A.; Rooney, Maura; Quigley, Richard J.; and Mirarchi, Thomas F., 6,340,441, Cl. 264-173.120.

R.P. Scherer Technologies, Inc.: *See—*
Tanner, Keith Edward; Draper, Peter Robert; Getz, John J.; Burnett, Stephen W.; and Youngblood, Elizabeth, 6,340,473, Cl. 424-451.000.

Raaijmakers, Ivo J.; Busacca, Robert S.; and Lane, John, to Applied Materials, Inc. Method and apparatus for enhancing a sputtering target's lifetime. 6,340,415, Cl. 204-192.120.

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Radius Engineering, Inc.: *See—*
Nelson, Ronald H.; Milovich, Dimitrije; Clark, Paul Nordstrom; and Loughry, Gregory Joseph, 6,340,509, Cl. 428-34.700.

Rafferty, Michael Francis: *See—*
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Ramachandran, Subramanian: *See—*
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Ramirez, Frank Seadio: *See—*
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Ramirez, Ramiro: *See—*
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Rangarajan, Bharath: *See—*
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Ranieri, John P.: *See—*
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Rao, Jun: *See—*
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Rashford, Robert A.: *See—*
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Rather AG: *See—*
Sommer, Heinrich, 6,340,715, Cl. 521-114.000.

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Reed, Eric J.: *See—*
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Regelmann, Jürgen: *See—*
Brunnhofer, Erwin; Goer, Bernhard; and Regelmann, Jürgen, 6,339,909, Cl. 52-786.130.

Rehman, Mohammad A.: *See—*
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REM Technology, Inc.: *See—*
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Reniero, Roberto: *See—*
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Ricoh Company, Ltd.: *See—*
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Rieder, Klaus-Alexander: *See—*
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Rieger, Franz: *See—*
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Riera, Roberto: *See—*
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Rinaldi, Peter M.; Thaxton, Edgar S.; and Castles, Gene, to Electric Boat Corporation. Modular transformer arrangement for use with multi-level power converter. 6,340,851, Cl. 307-82.000.

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Ritchie, Norman E.; Sameck, Christopher J.; and Milobinski, Marc, to Freightliner LLC. Seat suspension vibration damper. 6,340,152, Cl. 267-64.120.

Ritter, Christoph: *See—*
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Hauser, Manfred; Alaze, Norbert; Merklein, Dieter; Schuller, Wolfgang; Bayrhof, Julius; Kremsreiter, Walter; Evertz, Joachim; Zielke, Joerg; Zitzelsberger, Ralf; Weh, Andreas; Allenzon, Bernd; and Hellebrandt, Michael, 6,340,295, Cl. 417-470.000.
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Rodson, Marius: *See—*
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Rolison, Gary: *See—*
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Rotstein, Ron: *See—*
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Rowland, Mark: *See—*
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Krauss, Richard C.; Strom, Robert M.; Scortichini, Carey L.; Kruper, William J.; Wolf, Richard A.; Wu, Weishi W.; Carr, Albert A.; Hay, David A.; Rudisill, Duane E.; and Panzone, Gianbattista, 6,340,761, Cl. 546-239.000.

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McGaffey, John F.; Russell, Wayne L.; Van Cruz, Randy; and Beckwith, Leslie A., 6,340,936, Cl. 340-944.000.

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Rutherford, Mark D.; and Rogers, Arthur G., to LSI Logic Corporation. Automatic clock switcher. 6,341,355, Cl. 713-501.000.

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Eisele, Raymund; Burkart, Axel; Barrett, Paul; Ryan, Andrew; Holy, Peter; and Tantony, Shaun, 6,340,117, Cl. 235-492.000.

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Balduin, Michael; Havenith, Hubert; and Labrot, Michael, 6,340,045, Cl. 156-499.000.
Bremer, Carsten, 6,339,941, Cl. 65-355.000.

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Sakai, Yasushi: *See—*
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Sakuda, Shuichi: *See—*
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Sakurai, Atsushi, to Seiko Instruments Inc. Battery state monitoring circuit and battery apparatus. 6,340,889, Cl. 324-433.000.

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Azam, Guy, 6,339,867, Cl. 24-712.500.
Borel, René, 6,340,164, Cl. 280-11.225.
Burns, Jason; and Poersch, Susan, 6,339,845, Cl. 2-243.100.

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Sambucetti, Carlos Juan: See—
Berger, Daniel George; Brouillette, Guy Paul; Danovitch, David Hirsch; Gruber, Peter Alfred; Humphrey, Bruce Lee; Liehr, Michael; Motsiff, William Thomas; and Sambucetti, Carlos Juan, 6,340,630, Cl. 438-613.000.

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Sammy Corporation: *See—*
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Kim, Byung-Hee; Kim, Sun Hwa; Kang, Seung Gon; Shin, Hyun Eok; and Choi, Young Il, 6,340,998, Cl. 349-48.000.

Samsung-Electro-Mechanics Co., Ltd.: *See—*
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Cha, Jae-jin; and Myung, Doo-nam, 6,339,873, Cl. 29-783.000.
Choi, Sang Kook; Cho, Kyung Hawn; An, Won Sik; and Kwon, Chung Hwan, 6,340,625, Cl. 438-459.000.
Chung, Tae Gyeong; and Kim, Nam Seog, 6,340,838, Cl. 257-668.000.
Gu, Sung-Jin, 6,340,968, Cl. 345-211.000.
Hwang, Chang-Won; and Kim, Dong-Hwan, 6,340,609, Cl. 438-151.000.
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Lee, Jung-Yong; and Choi, Byoung Lyong, 6,340,859, Cl. 313-309.000.
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Oh, Cheol-gyun, 6,341,111, Cl. 369-47.220.
Park, Choul-gue, 6,340,405, Cl. 156-345.000.
Park, Jae-gun, 6,340,392, Cl. 117-13.000.
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Sandin, Tomas: *See—*
Johansson, Lars B.; Butovitsch, Paul Peter; and Sandin, Tomas, *6,341,124, Cl. 370-335.000.*

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Sankyo Company, Limited: *See—*
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Sanyo Electric Co., Ltd.: *See—*
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SAP Aktiengesellschaft: *See—*
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Kihara, Naoko; Yuasa, Fumihiko; Ushirogouchi, Tohru; Tada, Tsukasa; Sasaki, Osamu; Naito, Takuya; and Saito, Satoshi, 6,340,552, Cl. 430-270.100.

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Sasaki, Yuji: *See*—
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Satake, Takeshi: *See*—
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Sato, Jun: *See*—
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Sato, Junichi: *See*—
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Sato, Toshiya, to NEC Corporation. Boosting circuit. 6,341,077, Cl. 363-60.000.

Sauer-Danfoss Inc.: *See*—
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Saunders, Michael; and Sorenson, Dennis Willard, to Coinless Systems, Inc. Cashless peripheral device for a gaming system. 6,340,331, Cl. 463-25.000.

Savikovsky, Arkady: *See*—
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Sawano, Mitsuru, to Fuji Photo Film Co., Ltd. Three-dimensional optical memory. 6,341,120, Cl. 369-275.100.

Sawasaki, Tatsuo: *See*—
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Sawhney, Sanjay: *See*—
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Saylor, Mike. Automobile window coat hanger with suction cups. 6,340,104, Cl. 223-94.000.

SCA Hygiene Products Aktiebolag: *See*—
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Schaffer, Dean A.: *See*—
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Schaffer, Wolfram, to Robert Bosch GmbH. Electromechanical wheel brake system. 6,340,077, Cl. 188-156.000.

Schaldach, Max: *See*—
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Thong, Tran; and Schaldach, Max, 6,341,234, Cl. 607-9.000.

Schambil, Fred: *See*—
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Scheible, Adolf, to Grass GmbH. Braking device with closing servo control for movable cabinet/furniture parts. 6,340,078, Cl. 188-166.000.

Schein, Steven M.; Warden, David P.; King, Molly K.; Alba, Theresa A.; and Russman, Robert E., to Starsight Telecast. Inc. Television schedule system and method of operation for multiple program occurrences. 6,341,374, Cl. 725-43.000.

Scheindel, Christian T.; and Dundas, Dennis, to Advanced Packaging Corp. Dispensing mechanism for pressurized container. 6,340,103, Cl. 222-402.150.

Scher, Herbert B.; and Rodson, Marius, to Syngenta Limited. Microencapsulated acetochlor herbicidal composition. 6,340,653, Cl. 504-112.000.

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Scheunemann, Karl-Heinz: *See*—
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Scheuter, Felix; and Maurer, Christian, to Haenni Instruments AG. Force sensor. 6,339,962, Cl. 73-796.000.

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Schilp, Andrea: *See*—
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Schipper, Alphonsus T. J. M., to U.S. Philips Corporation. Recording and reproduction of an information signal in/from a track on a record carrier. 6,341,193, Cl. 386-65.000.

Schkolnik, Gerard: *See*—
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Schlafer, Michelle L.: *See*—
Hsieh, Bing R.; Yu, Yuan; Fuller, Timothy J.; Yanus, John F.; Pai, Damodar M.; Rommelmann, Heiko; Thompson, Allen J.; Stanton, Donald S.; Schlafer, Michelle L.; Kuntz, Alan R.; Kazakos, Ann M.; Wayman, William H.; and Hart, Steven C., 6,340,528, Cl. 428-412.000.

Schlömer, Bert: *See*—
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Schneider, Jerome John, Jr.: *See*—
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Schneiderman, Jeff: *See*—
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O'Farrell, Desmond J.; Veldman, Roger L.; and Schofield, Kenneth, 6,340,850, Cl. 307-10.100.

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Schorr, Ralph Hartman: *See*—
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Schranz, Christian: *See—*
Hauptmann, Jörg; and Schranz, Christian, 6,340,945, Cl. 341-172.000.

Schreck, David James: See—
Murray, Rex E.; Mawson, Simon; Szul, John F.; Erickson, Kersten Anne; Kwack, Tae Hoon; Karol, Frederick J.; and Schreck, David James, 6,340,730, Cl. 526-114.000.

Schreiber Foods, Inc.: *See—*
Fahs, Kenneth; Sullivan, David; and Nooyen, Michael, 6,339,912, Cl. 53-412.000.
Owens, Shawn, 6,340,490, Cl. 426-518.000.

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Schrier, Denis: *See—*
Bocan, Thomas Michael Andrew; Boxer, Peter Alan; Peterson, Joseph Thomas, Jr.; Schrier, Denis; and White, Andrew David, 6,340,709, Cl. 514-602.000.

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Schubert, Werner: See—
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Van Cleemput, Patrick A.; Laxman, Ravi Kumar; Shu, Jen; Schulberg, Michelle T.; and Nie, Bunsen, 6,340,628, Cl. 438-586.000.

Schuler, Bernhard, deceased (by Ursula Schuler, legal representative): See—
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Schwarz, James K., Jr.: *See—*
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Vidyanand, Ramgopal; Schwarz, James K., Jr.; and Mohamed, Margaret, 6,341,018, Cl. 358-1.180.

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Guzman-Casillas, Armando, 6,341,055, Cl. 361-81.000.

Schweizer, Hermann: See—
Lecheler, Reinhard; Schweizer, Hermann; and Seibold, Michael, 6,340,862, Cl. 313-484.000.

Schwetlick, Werner: *See—*
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Schwinghammer, Kurt Allen: *See—*
Cady, Susan Mancini; Steber, William David; Hayes, Phillip Wayne; Doscher, Mary Ehlers; and Schwinghammer, Kurt Allen, 6,340,671, *Cl. 514-28.000.*

Scian, Anthony F.: *See—*
Yach, David P.; Graham, James D.; and Scian, Anthony F., 6,341,288, Cl. 707-103.00R.

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Drobot, Adam Thomas; Green, Albert Myron; Phillips, Edward Alan; White, Robert Courtney; and Wyeth, Newell Convers, 6,341,118, Cl. 369-118.000.

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Vandermey, John, 6,340,814, Cl. 250-292.000.

Scimed Life Systems, Inc.: *See—*
Meyer, Jon A.; Rooney, Maura; Quigley, Richard J.; and Mirarchi, *Thomas F., 6,340,441, Cl. 264-173.120.*

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Krauss, Richard C.; Strom, Robert M.; Scortichini, Carey L.; Kruper, William J.; Wolf, Richard A.; Wu, Weishi W.; Carr, Albert A.; Hay, David A.; Rudisill, Duane E.; and Panzone, Gianbattista, 6,340,761, Cl. 546-239.000.

Scott, Michael L.: *See—*
Kontothanassis, Leonidas; Scott, Michael L.; Stets, Robert; Dwarkadas, Sandhya; Hardavellas, Nikos; and Hunt, Galen, 6,341,339, Cl. 711-148.000.

Scott, Ronald Francis: *See—*
Jakab, Csaba; Kohán, László; Scott, Ronald Francis; and Schneider, Jerome John, Jr., 6,340,861, Cl. 313-318.070.

Seagate Technology LLC: *See—*
Morris, John C.; and Cvancara, Dustin M., 6,341,048, Cl. 360-77.080.
Nguyen, Phuong; Ha, Thanh; and Chuang, Elsie Yang, 6,340,521, Cl. 428-336.000.

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Charles, Patrick; Smit, Robert; Bordes, Jean-Luc; Bineau, Pierre; Gaudez, Philippe; and Jurado, Manuel, 6,340,124, Cl. 241-37.500.

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Naganawa, Ryuichi; Noda, Kazutoshi; Tao, Hiroaki; and Tominaga, *Mamoru, 6,339,954, Cl. 73-61.790.*

Segawa, Teruo; Matsubara, Jyun; Okuyama, Kaoru; Ueda, Yukihide; Takahashi, Shyouichi; Nakamura, Setsuo; Urakami, Kazuo; and Kishita, Shin, to Nissan Motor Co., Ltd. Assembling apparatus assembling body side of automotive vehicle. 6,339,874, Cl. 29-824.000.

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Seifert, Wolfgang, to Webasto Vehicle Systems International GmbH. Motor vehicle roof with inserted roof module and installation process for it. *6,340,204, Cl. 296-216.070.*

Seiko Epson Corporation: See—
Hashimoto, Nobuaki, 6,340,606, Cl. 438-106.000.
Konishi, Yoshiharu; and Hayama, Hitoshi, 6,340,255, Cl. 400-615.200.
Kumagai, Toshio; and Aruga, Yoshiharu, 6,340,219, Cl. 347-33.000.
Nakazato, Hiroshi; Nakazawa, Yoshio; and Hama, Takashi, 6,341,203, Cl. 399-49.000.
Okina, Katsumi, 6,341,096, Cl. 365-220.000.
Tanaka, Chiharu; Matsuo, Mutsumi; Yokouchi, Yoshio; and Ushiki, Takeyoshi, 6,341,005, Cl. 349-149.000.
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Takahashi, Mitsuo, 6,341,191, Cl. 385-140.000.

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Seki, Kunio; Tsunoda, Toshiyuki; Kokami, Yasuhiko; and Kawauchi, Kunihiro, to Hitachi, Ltd. Semiconductor integrated circuit for brushless motor drive control and brushless motor drive control apparatus. 6,340,873, Cl. 318-254.000.

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Ueda, Kenji; Hotta, Tsuyoshi; Taniguchi, Yukio; Sekiguchi, Atsushi; and Iwyama, Hideyuki, 6,340,540, Cl. 430-1.000.

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Sell, Christian: *See—*
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Soberanis, David; and Forshey, Randy, 6,340,098, Cl. 222-56.000.

Semeniuk, George B.: *See—*
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Takemura, Yasuhiko, 6,340,830, Cl. 257-350.000.

Senju Metal Industry Co., Ltd.: *See—*
Nakamura, Hideki; and Mawatari, Shohei, 6,340,110, Cl. 228-179.100.

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Johnson, Kenneth C.; and Stanke, Fred E., 6,340,602, Cl. 438-7.000.

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Seo, Jin-Gyo, to Samsung Electronics, Co., Ltd. Apparatus and method for controlling power of laser diode used for optical recording media. 6,341,117, Cl. 369-116.000.

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Seo, Syunsuke: *See*—
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Joo, Seung Ki; and Lee, Jang Sik, 6,340,600, Cl. 438-3.000.

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Shan, Hongquing: *See*—
Bjorkman, Claes H.; Yu, Min Melissa; Shan, Hongquing; Cheung, David *W.; Yau, Wai-Fan; Liu, Kuowei; Chapra, Nasreen Gazala; Yin, Gerald;* Moghadam, Farhad K.; Huang, Judy H.; Yost, Dennis; Tang, Betty; and Kim, Yunsang, 6,340,435, Cl. 216-72.000.

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Bollag, Gideon; Crompton, Anne; North, Anne; Roscoe, William; and Sharma, Sanju, 6,340,575, Cl. 435-69.100.

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Hosoi, Yasunari, 6,341,082, Cl. 365-145.000.

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Izumi, Yoshihiro; and Teranuma, Osamu, 6,340,812, Cl. 250-208.100.
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Johnson, Richard Harold; Shaw, Limei; and Do, Cam-Thuy, 6,341,356, Cl. 714-4.000.

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Gonyou, Craig Alan; Doughty, Roger Lee; and Shelton, Monty Lee, 6,340,285, Cl. 415-116.000.

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Peeters, Eric; Noolandi, Jaan; Apte, Raj B.; Floyd, Philip D.; Small, Jonathan A.; Kovacs, Gregory J.; Lean, Meng H.; Volkel, Armin R.; Bolte, Steven B.; Shi, An-Chang; Endicott, Frederick J.; Anderson, Gregory B.; Hays, Dan A.; Kubby, Joel A.; Jackson, Warren B.; Moffat, Karen A.; McAneney, T. Brian; Veregin, Richard P. N.; McDougall, Maria N. V.; Boils, Danielle C.; and Szabo, Paul D., 6,340,216, Cl. 347-21.000.

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Ishiwata, Hiroyuki; Kabeya, Mototsugu; Shigyo, Hiromichi; Shiratsuchi, Masami; Hattori, Yukio; Nakao, Hiroshi; Nagoya, Takao; Sato, Seiichi; Oda, Soichi; Suda, Makoto; and Shibasaki, Manabu, *6,340,682, Cl. 514-235.800.*

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Shin-Etsu Handotai Co.: *See*—
Iino, Eiichi; and Kitagawa, Kouji, 6,340,391, Cl. 117-13.000.

Shin, Hyun Eok: *See*—
Kim, Byung-Hee; Kim, Sun Hwa; Kang, Seung Gon; Shin, Hyun Eok; and Choi, Young Il, 6,340,998, Cl. 349-48.000.

Shine, Robert: *See*—
Youden, Katharine E.; Arnone, David F.; Wallace, Mona; and Shine, Robert, 6,340,820, Cl. 250-484.400.

Shinko Electric Industries Co., Ltd.: *See*—
Iijima, Takahiro; and Rokugawa, Akio, 6,340,841, Cl. 257-700.000.

Shinozaki, Shimpei: *See*—
Nakanishi, Ryoichi; Nishikawa, Hiroshi; Takishima, Suguru; and Shinozaki, Shimpei, 6,341,106, Cl. 369-44.280.

Shiobara, Ryoichi: *See*—
Kaiho, Masayuki; Mori, Hideaki; Kieda, Shigekazu; Shiobara, Ryoichi; Hattori, Kenichi; and Komura, Akiyoshi, 6,340,853, Cl. 310-61.000.

Shiomi, Tetsuhiro: *See*—
Takeda, Ryuji; Oishi, Seiichiro; and Shiomi, Tetsuhiro, 6,341,103, Cl. 369-32.000.

Shionogi & Co., Ltd.: *See*—
Kurimoto, Isao; Hirata, Norihiko; Nakamura, Akihiko; and Aratake, Yuichiro, 6,340,763, Cl. 548-194.000.

Shiraishi, Emiko: *See*—
Fujita, Yasunobu; Yamamoto, Masao; Hachiya, Kouichi; Yokouchi, Atsushi; Yabe, Toshikazu; Shiraishi, Emiko; and Naka, Michiharu, 6,340,244, Cl. 384-462.000.

Shirakura, Hidetoshi: *See*—
Toya, Tetsuya; Shirakura, Hidetoshi; and Kon, Junichi, 6,340,772, Cl. 564-5.000.

Shirasaki, Yasuyo; Tanabe, Tomoko; and Kikuchi, Chuichi, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for character recognition. 6,341,176, Cl. 382-229.000.

Shiratsuchi, Masami: *See*—
Ishiwata, Hiroyuki; Kabeya, Mototsugu; Shigyo, Hiromichi; Shiratsuchi, Masami; Hattori, Yukio; Nakao, Hiroshi; Nagoya, Takao; Sato, Seiichi; Oda, Soichi; Suda, Makoto; and Shibasaki, Manabu, 6,340,682, Cl. 514-235.800.

Shirley, Lyle, to Massachusetts Institute of Technology. Compensation for measurement uncertainty due to atmospheric effects. 6,341,015, Cl. 356-517.000.

Shoda, Hisashi: *See*—
Sugano, Toshihiko; Iwama, Naoshi; Isobe, Eiji; Suzuki, Toru; Maruyama, Yasuo; Hayakawa, Satoshi; Shoda, Hisashi; Kashimoto, Masami; Kato, Taku; Aoshima, Takayuki; Nishimura, Sugio; Suga, Yoshinori; and Sieber, Stefan, 6,340,652, Cl. 502-118.000.

Short, Megan D.: *See*—
Roberts, Jeannette C.; Wilmore, Britta H.; Cassidy, Pamela B.; Dominick, Pamela K.; and Short, Megan D., 6,340,746, Cl. 536-17.400.

Showa Denko K.K.: *See*—
Ohmori, Masahiro; Hamanaka, Tadashi; and Nakamura, Hidenori, 6,340,711, Cl. 516-79.000.
Ohta, Keiichiro, 6,339,880, Cl. 29-890.030.

Showa Denko Kabushiki Kaisha: *See*—
Suzuki, Mikio; Miyamoto, Noriyuki; Shimaoka, Emi; and Takagi, Kimie, 6,340,505, Cl. 427-570.000.

Shrader, Theodore Jack London: *See*—
Child, Garry L.; Shrader, Theodore Jack London; and Soper, Davis Kent, 6,341,352, Cl. 713-201.000.

Shu, Jen: *See*—
Van Cleemput, Patrick A.; Laxman, Ravi Kumar; Shu, Jen; Schulberg, Michelle T.; and Nie, Bunsen, 6,340,628, Cl. 438-586.000.

Shuen, Shun Tian, to Janchy Enterprises Co., Ltd. Decorative structure for car exhaust pipe. 6,340,144, Cl. 248-205.100.

Shukuri, Shoji: *See*—
Hiraki, Mitsuru; and Shukuri, Shoji, 6,341,090, Cl. 365-200.000.

Shumsky, Jay S.: *See*—
Failli, Amedeo A.; Shumsky, Jay S.; Memoli, Kevin A.; and Strike, Donald P., 6,340,687, Cl. 514-274.000.

Shuvalov, Rudolph: *See*—
Durst, Roger D.; Carney, Sean N.; Diawara, Yacouba; and Shuvalov, Rudolph, 6,340,819, Cl. 250-374.000.

Siddall and Hilton Limited of Central United Kingdom: *See*—
Clayton, Barry, 6,339,857, Cl. 5-716.000.

Siddiqui, Arshad: *See*—
Bachand, Benoit; Nguyen-Ba, Nghe; Siddiqui, Arshad; and Levesque, Sophie, 6,340,690, Cl. 514-300.000.

Sieber, Stefan: *See*—
Sugano, Toshihiko; Iwama, Naoshi; Isobe, Eiji; Suzuki, Toru; Maruyama, Yasuo; Hayakawa, Satoshi; Shoda, Hisashi; Kashimoto, Masami; Kato, Taku; Aoshima, Takayuki; Nishimura, Sugio; Suga, Yoshinori; and Sieber, Stefan, 6,340,652, Cl. 502-118.000.

Siemens Aktiengesellschaft: *See*—
Baetz, Lothar; Haerer, Wolfgang; and Mertelmeier, Thomas, 6,341,156, Cl. 378-98.800.
Papiernik, Wolfgang, 6,341,244, Cl. 700-170.000.
Wever, Utz; Zheng, Qinghua; and Fröhlich, Norbert, 6,341,364, Cl. 716-7.000.

Siemens Medical Systems, Inc.: *See*—
Xu, Ming; and Chen, Zheng, 6,341,172, Cl. 382-132.000.

Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See*—
Köhler, Friedrich; and Lorenz, Pia, 6,341,059, Cl. 361-685.000.

Signature BioScience, Inc.: *See*—
Hefti, John, 6,340,568, Cl. 435-6.000.

Silitek Corporation: *See*—
Li, Tung Hsueh, 6,340,803, Cl. 200-344.000.

Silva, Rogerio H.: *See*—
Fielder, Coy M.; and Silva, Rogerio H., 6,340,064, Cl. 175-385.000.

Silverbrook, Kia, to Silverbrook Research Pty Ltd. Utilizing venting in a MEMS liquid pumping system. 6,340,222, Cl. 347-54.000.

Silverbrook Research Pty Ltd: *See*—
Silverbrook, Kia, 6,340,222, Cl. 347-54.000.

Silverman, Alexander E.: *See*—
Howard, Matthew E.; Biegelsen, David K.; Bobrow, Daniel G.; Hebel, L. Charles; Mackinlay, Jock D.; Sheridon, Nicholas K.; and Silverman, Alexander E., 6,340,965, Cl. 345-107.000.

Silverman, B. David: *See*—
Floratos, Aris; Rigoutsos, Isidore; and Silverman, B. David, 6,341,284, Cl. 707-6.000.

Silverman, David G. Process for reversibly compressing prechannelled/preweakened diaphragms. 6,340,359, Cl. 604-415.000.

Simatek A/S: *See*—
Jensen, Arne Grønbæk; and Christensen, Keld, 6,340,383, Cl. 96-233.000.

Simeray, Janick; and Laligant, Pascal. Power converter for supplying electricity from a difference in temperature. 6,340,787, Cl. 136-201.000.

Simkulet, Michelle D.: *See*—
Gutierrez, Adolfo O.; Aceto, Steven C.; and Simkulet, Michelle D., 6,341,259, Cl. 702-117.000.

Simms, Juanita P. Transmitter/receiver stethoscope and holder therefor. 6,340,350, Cl. 600-528.000.

Simonds, Vincent; Gendreau, Richard K.; and Kennedy, Thomas J., III, to Spalding Sports Worldwide, Inc. Method of coating a game ball with a solvent-based polyurethane cured with catalyst. 6,340,503, Cl. 427-393.500.

Simonof, John F., Jr.: *See*—
Gill, David R.; Graham, Dennis E.; and Simonof, John F., Jr., 6,340,100, Cl. 222-105.000.

Simonsson, Olof: *See*—
Möster, Erik; Larsson, Paul; Olsson, Mats; Simonsson, Olof; Larsson, Mats; and Portela, Rafael, 6,341,227, Cl. 455-550.000.

Simpson, James H.: *See*—
Kronenthal, David R.; Denzel, Theodor; Chen, Bang-Chi; Simpson, James H.; and Deshpande, Rajendra P., 6,340,752, Cl. 540-490.000.

Singh, Bhanwar: *See*—
Phan, Khoi A.; Rangarajan, Bharath; and Singh, Bhanwar, 6,339,955, Cl. 73-105.000.

Singh, Harmeet; and Lewis, David Kirk, to Qtera Corporation. Method and apparatus for the passband flattening of dense wavelength division optical filters. 6,341,186, Cl. 385-27.000.

Singh, Sharat; and Ullman, Edwin F., to Dade Behring Marburg GmbH. Metal chelate containing compositions for use in chemiluminescent assays. 6,340,599, Cl. 436-534.000.

Sinks, Murray: *See*—
Hayes, Donald J.; Frederickson, Christopher J.; and Sinks, Murray, 6,339,897, Cl. 43-132.100.

Sipos, Peter Andrew: *See*—

Huang, James Chin-Kuang; Sipos, Peter Andrew; Kale, Lawrence Thomas; Thomas, Patrick R.; and Auger, James Arthur, 6,340,532, Cl. 428-523.000.

Sjoberg, Stephen Lee: *See—*
Su, Wei-Yang; Sjoberg, Stephen Lee; and Crawford, Wheeler Conrad, 6,340,559, Cl. 430-331.000.

Sjöström, Hans: *See—*
Horton, Stuart Alexander Leslie; Vijgen, Renier Olga Ernst; Cundill, Robin Thomas; and Sjöström, Hans, 6,340,245, Cl. 384-492.000.

Skalka, Gerald P., to Victor Stanley, Inc. Locking mechanism for trash can receptacle and other doors. 6,339,944, Cl. 70-63.000.

SKC Acquisition Corporation: *See—*
Propst, Charles W., Jr., 6,340,517, Cl. 428-195.000.

SKF Engineering & Research Centre B.V.: *See—*
Horton, Stuart Alexander Leslie; Vijgen, Renier Olga Ernst; Cundill, Robin Thomas; and Sjöström, Hans, 6,340,245, Cl. 384-492.000.
Zhou, Xiao Bo, 6,340,400, Cl. 148-605.000.

SKF Industrie S.p.A.: *See—*
Bertetti, Paolo, 6,339,964, Cl. 73-862.334.

Skinner, Neal G., to Halliburton Energy Services, Inc. Early formation evaluation tool. 6,340,062, Cl. 175-58.000.

Skuballa, Werner: *See—*
Buchmann, Bernd; Frohlich, Wolfgang; Giesen, Claudia; Hennekes, Hartwig; Jaroch, Stefan; and Skuballa, Werner, 6,340,706, Cl. 514-560.000.

Slafer, Loren I.: *See—*
Barsky, Michael F.; Tanner, Thomas M.; Slafer, Loren I.; Williams, Paul D.; Semeniuk, George B.; and Allard, Joseph M., 6,340,138, Cl. 244-165.000.

Slark, Andrew Trevithick; Chisholm, Michael Stephen; and Harte, Helen, to Imperial Chemical Industries PLC. Functionalized polymer, a method for producing same and curable compositions containing same. 6,340,733, Cl. 526-328.500.

Sleigh, Merilyn Joy: *See—*
Hunt, Sybille Marie; Gray, Peter Philip; and Sleigh, Merilyn Joy, 6,340,574, Cl. 435-69.100.

Slesinger, Kris Allan: *See—*
Mays, Allen Thomas; Slesinger, Kris Allan; and Weller, Michael Camillo, 6,340,111, Cl. 228-180.220.

Small, Jonathan A.: *See—*
Peeters, Eric; Noolandi, Jaan; Apte, Raj B.; Floyd, Philip D.; Small, Jonathan A.; Kovacs, Gregory J.; Lean, Meng H.; Volkel, Armin R.; Bolte, Steven B.; Shi, An-Chang; Endicott, Frederick J.; Anderson, Gregory B.; Hays, Dan A.; Kubby, Joel A.; Jackson, Warren B.; Moffat, Karen A.; McAneney, T. Brian; Veregin, Richard P. N.; McDougall, Maria N. V.; Boils, Danielle C.; and Szabo, Paul D., 6,340,216, Cl. 347-21.000.

Smart, Donald V.; and Svetkoff, Donald J., to General Scanning Inc. Energy-efficient method and system for processing target material using an amplified, wavelength-shifted pulse train. 6,340,806, Cl. 219-121.620.

SmartDisk Corporation: *See—*
Eisele, Raymund; Burkart, Axel; Barrett, Paul; Ryan, Andrew; Holy, Peter; and Tantony, Shaun, 6,340,117, Cl. 235-492.000.

SmartPower Corporation: *See—*
Lee, Howard Hong-Dough, 6,341,354, Cl. 713-324.000.

Smit, Robert: *See—*
Charles, Patrick; Smit, Robert; Bordes, Jean-Luc; Bineau, Pierre; Gaudez, Philippe; and Jurado, Manuel, 6,340,124, Cl. 241-37.500.

Smith, Brian J.; Valloppillil, Vinod V.; and Hurvig, Hans, to Microsoft Corporation. Directing data object access requests in a distributed cache. 6,341,311, Cl. 709-226.000.

Smith, Carl R.; Madura, Jeffrey R.; and Kramer, Jesse J., to Northrop Grumman Corporation. Printed wiring board structure with integral metal matrix composite core. 6,340,796, Cl. 174-255.000.

Smith, Colin Donald: *See—*
Beaton, Brian Finlay; Smith, Colin Donald; Blouin, Francois; Comeau, Guillaume; and Craddock, Arthur Julian Patterson, 6,340,979, Cl. 345-764.000.

Smith, David A.: *See—*
Wilner, Alan E.; Smith, David A.; Cai, Jin-Xin; Feng, Kai-Ming; Zou, Xingyu; and Huang, Shouhua, 6,341,021, Cl. 359-124.000.

Smith, David Henry: *See—*
McAlpine, Warren Welborn; Mast, Stephen Owen; Smith, David Henry; and Varga, Joseph, 6,340,126, Cl. 242-160.200.

Smith, Edward Dewey, III: *See—*
Drechsler, Lee Ellen; Rabe, Thomas Elliot; and Smith, Edward Dewey, III, 6,340,466, Cl. 424-401.000.

Smith, Kurt R.: *See—*
Bolger, Ciaran; Melkent, Anthony J.; and Smith, Kurt R., 6,340,363, Cl. 606-90.000.

Smith, Paul H., Jr.: *See—*
Curran, Thomas F., Jr.; Krywanczyk, Timothy C.; Lube, Michael S.; Moon, Matthew D.; Nadeau, Rock; Reynolds, Clark D.; Schaffer, Dean A.; Sharrow, Joel M.; Smith, Paul H., Jr.; Thomas, David C.; White, Eric J.; and Yao, Kenneth H., 6,340,601, Cl. 438-4.000.

Smith, Peter F.: *See—*
Jahani, Hooshang; Bruner, Scott R.; and Smith, Peter F., 6,340,090, Cl. 211-41.100.

Smith, Stephen H., to Smith Technology Development, LLC. Disc antenna system. 6,340,950, Cl. 343-700.0MS.

Smith Technology Development, LLC.: *See—*
Smith, Stephen H., 6,340,950, Cl. 343-700.0MS.

Smith, Terrance P.: *See—*
Jubran, Nusrallah; Tokarski, Zbigniew; and Smith, Terrance P., 6,340,548, Cl. 430-58.450.

SmithKline Beecham Corporation: *See—*
Dawson, Michael John; Mahmoudian, Mahmoud; and Wallis, Christopher John, 6,340,587, Cl. 435-280.000.
Dubois, Jacques; and St-Pierre, Claude, 6,340,689, Cl. 514-300.000.
Ingraham, Karen Anne; So, Chi Yong; Van Horn, Stephanie; Chalker, Alison Francis; Holmes, David John; Biswas, Sanjoy; Brown, James Raymond; Burnham, Martin Karl Russel; Warren, Patrick Vernon; Warren, Richard Lloyd; and Zalacain, Magdalena, 6,340,564, Cl. 435-6.000.

Snow, Alan D., to University of Washington. Rodent models of human amyloidoses. 6,340,783, Cl. 800-12.000.

Snow, Jimmy D. Fence cornerpost assembly brackets. 6,340,151, Cl. 256-65.000.

Snyder, Vicki L. Vacuum cleaner power cord system. 6,339,861, Cl. 15-323.000.

So, Chi Yong: *See—*
Ingraham, Karen Anne; So, Chi Yong; Van Horn, Stephanie; Chalker, Alison Francis; Holmes, David John; Biswas, Sanjoy; Brown, James Raymond; Burnham, Martin Karl Russel; Warren, Patrick Vernon; Warren, Richard Lloyd; and Zalacain, Magdalena, 6,340,564, Cl. 435-6.000.

Soadco, S.L.: *See—*
Padros Fradera, Alejandro, 6,340,300, Cl. 433-174.000.

Soberanis, David; and Forshey, Randy, to Semco Corporation. Chemical delivery systems and methods of delivery. 6,340,098, Cl. 222-56.000.

Socha, Greg; Maynard, Doug; and Nord, Eric, to Pedicraft, Inc. Crib or bed with fully accessible patient surface and side rail positioning mechanism therefor. 6,339,855, Cl. 5-93.100.

Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Chen, Zhijie, 6,339,939, Cl. 62-646.000.

Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.): *See—*
Chabrier de Lassauniere, Pierre Etienne; Auvin, Serge; Bigg, Dennis; and Auguet, Michel, 6,340,700, Cl. 514-438.000.
O'Reilly, Joseph, 6,340,456, Cl. 424-48.000.

Sokolov, Andrey Jurievich: *See—*
Aristovich, Valery Jurievich; Aristovich, Yury Valerievich; Fulmer, John William; and Sokolov, Andrey Jurievich, 6,340,777, Cl. 568-411.000.

Solberg, Gary I.: *See—*
Solberg, Timothy J.; and Solberg, Gary I., 6,340,227, Cl. 351-123.000.

Solberg, Timothy J.; and Solberg, Gary I., to Solberg, Timothy J. Earplug system. 6,340,227, Cl. 351-123.000.

Solomon, Walter. Waterfowl decoy with separately movable wings and feet. 6,339,893, Cl. 43-3.000.

Solomon, Walter. Waterfowl decoy with interchangeable movable appendages. 6,339,894, Cl. 43-3.000.

Solutia Inc.: *See—*
Holtrop, James S.; and Wiedemann, John R., 6,340,000, Cl. 119-442.000.

Solvay: *See—*
Bossoutrot, Jean-Michel; and Garcia, François, 6,340,452, Cl. 423-415.200.

SOMA Networks, Inc.: *See—*
Blodgett, James R., 6,340,915, Cl. 330-52.000.

Someya, Ryuichi: *See—*
Hasegawa, Ryo; Matono, Takaaki; Sakai, Takeshi; and Someya, Ryuichi, 6,340,993, Cl. 348-572.000.

Sommer, Heinrich, to Rather AG. Foamable composition adapted for delivery from pressurized containers, for producing insulating foams. 6,340,715, Cl. 521-114.000.

Song, Woo Jin: *See—*
Oak, Sang Soo; Song, Woo Jin; and Lee, Kwang Chun, 6,341,147, Cl. 375-341.000.

Song, Young Bok; Lee, Jae Hyuck; Chung, Moon Shick; and Lee, Nam Kyu, to LG Electronics Inc. Circuit and method for driving plasma display panel. 6,340,960, Cl. 345-60.000.

Soni, Pravin L.: *See—*
Conn, Thomas E.; Ford, Russell; Soni, Pravin L.; Tierney, Michael J.; and Vijayakumar, Prema, 6,341,232, Cl. 604-20.000.

Sony Chemicals Corp.: *See—*
Yamada, Yukio, 6,340,607, Cl. 438-106.000.

Sony Corporation: *See—*
Fujinami, Yasushi, 6,341,192, Cl. 386-52.000.
Fujiwara, Nobuhiro; and Mamiya, Atsushi, 6,340,067, Cl. 180-206.000.
Inoue, Hiraku; Kawamura, Harumi; Endo, Atsushi; and Yamamoto, Kazuo, 6,341,319, Cl. 710-52.000.
Ishii, Toshiyuki; Misono, Kousuke; Misawa, Seiichi; Fukuda, Joji; Nishigaki, Tetsuo; and Ota, Kiyoshi, 6,341,047, Cl. 360-72.200.
Kaneda, Takashi; and Takahashi, Toru, 6,340,182, Cl. 292-102.000.
Kawamoto, Yoji; and Kurihara, Akira, 6,341,133, Cl. 370-401.000.
Kohashi, Takashi; Ogino, Akira; Moriwaki, Hisayoshi; Kimura, Yuji; and Ikeda, Nozomu, 6,341,141, Cl. 375-137.000.
Konishi, Morikazu, 6,340,962, Cl. 345-75.200.
Matuyama, Yasuhiko, 6,340,908, Cl. 327-238.000.
Miyahara, Nobuyoshi; and Yagasaki, Yoichi, 6,341,350, Cl. 713-176.000.
Nakagawa, Toshiyuki, 6,340,938, Cl. 341-58.000.
Ohsawa, Kenji; and Kusano, Hidetoshi, 6,340,840, Cl. 257-672.000.

Otani, Hisao; and Miyazaki, Akihiro, 6,341,115, Cl. 369-77.100.
Takeda, Ryuji; Oishi, Seiichiro; and Shiomi, Tetsuhiro, 6,341,103, Cl. 369-32.000.
Yamamoto, Katsuya; and Naito, Masahiko, 6,341,226, Cl. 455-525.000.
Yamamoto, Tsutomu; and Fujita, Hiroyuki, 6,341,278, Cl. 707-2.000.
Yasumura, Masayuki, 6,341,075, Cl. 363-21.200.
Yoshida, Teruyuki; and Tanaka, Shosuke, 6,341,194, Cl. 386-80.000.

Sony/Tektronik Corporation: *See—*
Nara, Akira; and Koyota, Hideaki, 6,340,883, Cl. 324-76.780.

Sook Myung Women's University: *See—*
Kwon, Young-Ee; Whang, Kyu Ja; and Kim, Won Kyu, 6,340,770, Cl. 556-137.000.

Sooriyakumaran, Ratnam: *See—*
Lin, Qinghuang; Angelopoulos, Marie; Katnani, Ahmad D.; and Sooriyakumaran, Ratnam, 6,340,734, Cl. 528-15.000.

Soper, Davis Kent: *See—*
Child, Garry L.; Shrader, Theodore Jack London; and Soper, Davis Kent, 6,341,352, Cl. 713-201.000.

Sorenson, Dennis Willard: *See—*
Saunders, Michael; and Sorenson, Dennis Willard, 6,340,331, Cl. 463-25.000.

Sorori, Tadahiro: *See—*
Kawamura, Koichi; Maemoto, Kazuo; Yamasaki, Sumiaki; Sorori, Tadahiro; Tashiro, Hiroshi; and Fukino, Kiyotaka, 6,340,554, Cl. 430-270.100.

Southgate, Dominic: *See—*
Rynhart, Alan; Fallon, John; McIlroy, James; and Southgate, Dominic, 6,340,892, Cl. 324-640.000.

Southpac Trust International, Inc.: *See—*
Weder, Donald E., 6,339,900, Cl. 47-72.000.
Weder, Donald E., 6,339,901, Cl. 47-72.000.

Soynikov, Vyacheslav Y.: *See—*
Kadatskyy, Anatoly F.; Karpov, Yevgen V.; Soynikov, Vyacheslav Y.; and Volovets, Naum I., 6,341,076, Cl. 363-56.120.

SPA Logic Inc.: *See—*
Amendt, Darcy S., 6,339,854, Cl. 4-524.000.

Spagnol, Michel: *See—*
Jacquot, Roland; and Spagnol, Michel, 6,340,775, Cl. 568-376.000.

Spahr, Tim: *See—*
Johnson, Mitchell D.; Klein, Michael A.; Parks, Matthew David; Karl, Mark Thomas; Johnson, Patrick; Spahr, Tim; Sajna, Jeff; Andrews, Craig; Higgins, Kenneth Terry; Lowery, Robert A.; Ruby, Keith D.; Mitchell, Alton; and Davis, Rhonda L., 6,340,186, Cl. 293-120.000.

Spalding Sports Worldwide, Inc.: *See—*
Simonds, Vincent; Gendreau, Richard K.; and Kennedy, Thomas J., III, 6,340,503, Cl. 427-393.500.

Sparkolor Corporation: *See—*
Deacon, David A. G., 6,341,189, Cl. 385-130.000.

Sparrow, Thomas E.: *See—*
Dillon, Ben N.; and Sparrow, Thomas E., 6,339,917, Cl. 56-14.600.

Specht, Martin, to Breed Automotive Technology, Inc. Three-point seat belt. 6,340,173, Cl. 280-733.000.

Spencer, Michael: *See—*
Dettling, Joseph C.; Steger, John J.; Spencer, Michael; and Russo, Robert V., 6,340,066, Cl. 180-54.100.

Spencer Wright Industries, Inc.: *See—*
Beverly, Ian, 6,339,995, Cl. 112-80.160.

Speth, Gerhard: *See—*
Klukowski, Horst; Stute, Rolf; and Speth, Gerhard, 6,340,494, Cl. 426-640.000.

Spitsberg, Irene Theodor, to General Electric Company. Thermal barrier coating system with improved aluminide bond coat and method therefor. 6,340,500, Cl. 427-250.000.

Spring Soft Inc.: *See—*
Wang, Jui-Chien; and Li, Yih-Lang, 6,341,366, Cl. 716-11.000.

Square Co., Ltd.: *See—*
Rimoto, Shiyu; and Yoshinobu, Tomoaki, 6,340,332, Cl. 463-31.000.

Sridhar, Srinivasa: *See—*
Damarla, Sreenivasa Rao; Sridhar, Srinivasa; and Gopinathan, Mambully Chandrasekaran, 6,340,484, Cl. 424-761.000.

Srinivasan, Kesavan: *See—*
Rhee, Ann; Chatterjee, Sumanta K.; Loaiza, Juan R.; and Srinivasan, Kesavan, 6,341,303, Cl. 709-104.000.

Stafford, Timothy J. Bag supporting device. 6,340,037, Cl. 141-316.000.

Stainbrook, Barbara: *See—*
Bonardi, Christian; Hebrard, Pierre; Peres, Richard; Malone, Kenneth; Nosowitz, Martin; Mendolia, Michael; Callais, Peter; Stainbrook, Barbara; and Lou, Jianfeng, 6,340,729, Cl. 526-83.000.

Stanke, Fred E.: *See—*
Johnson, Kenneth C.; and Stanke, Fred E., 6,340,602, Cl. 438-7.000.

Stankelis, Thomas M.: *See—*
Correa, Mark; Gelles, Rubin; He, Duanfeng; Joseph, Eugene; Li, Yajun; Patel, Mehul; and Stankelis, Thomas M., 6,340,114, Cl. 235-462.220.

Stanton, Donald S.: *See—*
Hsieh, Bing R.; Yu, Yuan; Fuller, Timothy J.; Yanus, John F.; Pai, Damodar M.; Rommelmann, Heiko; Thompson, Allen J.; Stanton, Donald S.; Schlafer, Michelle L.; Kuntz, Alan R.; Kazakos, Ann M.; Wayman, William H.; and Hart, Steven C., 6,340,528, Cl. 428-412.000.

Stanton, Kelly; and Misiewicz-DelZotto, Laura, to Guardian Containment Corp. Underground storage vault. 6,340,269, Cl. 405-53.000.

Stanton, William H.; Penelton, Gary Blaine; and Campbell, Glenn, to New Flyer Industries Limited. Window structure for mass transit vehicle. 6,340,202, Cl. 296-201.000.

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Schein, Steven M.; Warden, David P.; King, Molly K.; Alba, Theresa A.; and Russman, Robert E., 6,341,374, Cl. 725-43.000.

Starwave Corporation: *See—*
Nye, Jeff, 6,341,279, Cl. 707-3.000.

STC Nara Co., Ltd.: *See—*
Kwon, Young-Ee; Whang, Kyu Ja; and Kim, Won Kyu, 6,340,770, Cl. 556-137.000.

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Stecher, Matthias: *See—*
Mosig, Karsten; Stecher, Matthias; and Schwetlick, Werner, 6,340,616, Cl. 438-268.000.

Steger, John J.: *See—*
Dettling, Joseph C.; Steger, John J.; Spencer, Michael; and Russo, Robert V., 6,340,066, Cl. 180-54.100.

Steinberg, Daniel B.: *See—*
Cantu, Gary R.; Pfeiffer, James W.; and Steinberg, Daniel B., 6,340,958, Cl. 345-2.000.

Steiner, Rudolf: *See—*
Kreuter, Matthias H.; and Steiner, Rudolf, 6,340,479, Cl. 424-725.000.

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Cardineau, Guy A.; Stelman, Steven J.; and Narva, Kenneth E., 6,340,593, Cl. 435-412.000.

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Korenev, Sergey Alexandrovich; Masefield, John; and Kriebel, Jerry, 6,340,718, Cl. 522-156.000.

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Kontothanassis, Leonidas; Scott, Michael L.; Stets, Robert; Dwarkadas, Sandhya; Hardavellas, Nikos; and Hunt, Galen, 6,341,339, Cl. 711-148.000.

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Lakshman, Tirunell V.; and Stiliadis, Dimitrios, 6,341,130, Cl. 370-389.000.

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Muirhead, Scott A. W.; and Buckingham, Kent E., 6,340,194, Cl. 296-100.060.

STMicroelectronics S.A.: *See—*
Romain, Fabrice, 6,341,299, Cl. 708-523.000.

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Libera, Giovanna Dalla; Vajana, Bruno; and Patelmo, Matteo, 6,340,828, Cl. 257-321.000.

Stober, Reinhard: *See—*
Görl, Udo; Stober, Reinhard; Lauer, Hartmut; and Ernst, Uwe, 6,340,724, Cl. 524-442.000.

Stocco, Leo J.: *See—*
Salcudean, Septimiu E.; Stocco, Leo J.; and Chau, Icarus C. N., 6,339,969, Cl. 74-490.050.

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Norlander, Leif, 6,340,408, Cl. 162-20.000.

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Stotz, Oliver, to Mannesmann VDO AG. Means and process for encapsulating electric circuits by means of injection molding. 6,340,791, Cl. 174-52.100.

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Dubois, Jacques; and St-Pierre, Claude, 6,340,689, Cl. 514-300.000.

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Mitchell, William M.; and Stratton, Charles W., 6,340,463, Cl. 424-263.100.

Straub, Robert D.; Galloway, William M.; and Allsburg, Michael Van, to Diesel Technology Company. Method and apparatus for refurbishing a valve seat in a fuel injector assembly. 6,339,877, Cl. 29-888.420.

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Hilgers, Luuk; and Strebelle, Michel, 6,340,464, Cl. 424-280.100.

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Svorc, Josef; Miertus, Stanislav; and Stredansky, Miroslav, 6,340,597, Cl. 436-518.000.

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Failli, Amedeo A.; Shumsky, Jay S.; Memoli, Kevin A.; and Strike, Donald P., 6,340,687, Cl. 514-274.000.

Stringer, Bradley Michael John, to CellFactors plc. Human cell lines. 6,340,592, Cl. 435-372.000.

Strobel, Christopher J.: *See*—
Poirier, John R.; and Strobel, Christopher J., 6,341,219, Cl. 455-116.000.
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Krauss, Richard C.; Strom, Robert M.; Scortichini, Carey L.; Kruper, William J.; Wolf, Richard A.; Wu, Weishi W.; Carr, Albert A.; Hay, David A.; Rudisill, Duane E.; and Panzone, Gianbattista, 6,340,761, Cl. 546-239.000.
Stryker, Eleanor F.: *See*—
Lombardo, Charlotte S.; Stryker, Eleanor F.; Brenner, David A.; Dymond, Jayson W.; and Lemieux, Dave R., 6,341,290, Cl. 707-104.100.
Studer Draht-und Kabelwerk: *See*—
Hargarten, Werner; Hartmann, Hans Jörg; and Voss, Burkhard, 6,340,717, Cl. 522-83.000.
Sturgeon, Douglas H.: *See*—
Sziklai, Anthony T.; Verma, Ashish K.; Popowski, Judith E.; Frankland, Richard; Mitchell, Christopher M.; Ferguson, Joseph D.; and Sturgeon, Douglas H., 6,341,287, Cl. 707-102.000.
Sturm, Christian: *See*—
Flamm, Franz-Josef; and Sturm, Christian, 6,340,128, Cl. 242-413.500.
Stute, Rolf: *See*—
Klukowski, Horst; Stute, Rolf; and Speth, Gerhard, 6,340,494, Cl. 426-640.000.
Su, Cheng-Yuan. Sealing valve structure for liquid sprayers. 6,340,102, Cl. 222-321.200.
Su, Wei-Yang; Sjoberg, Stephen Lee; and Crawford, Wheeler Conrad, to Huntsman Petrochemical Corporation. Semiconductor developing agent. 6,340,559, Cl. 430-331.000.
Suda, Makoto: *See*—
Ishiwata, Hiroyuki; Kabeya, Mototsugu; Shigyo, Hiromichi; Shiratsuchi, Masami; Hattori, Yukio; Nakao, Hiroshi; Nagoya, Takao; Sato, Seiichi; Oda, Soichi; Suda, Makoto; and Shibasaki, Manabu, 6,340,682, Cl. 514-235.800.
Sudharsanan, Subramania I.: *See*—
Shankar, Ravi; and Sudharsanan, Subramania I., 6,341,300, Cl. 708-605.000.
Sudijono, John: *See*—
Chooi, Simon; Aliyu, Yakub; Zhou, Mei Sheng; Sudijono, John; Gupta, Subhash; Roy, Sudipto Ranendra; Ho, Paul; and Yi, Xu, 6,340,608, Cl. 438-108.000.
Suetsugu, Yasushi: *See*—
Imura, Kohichi; Uemoto, Hideo; Hojo, Akimichi; Tanaka, Junzo; Kikuchi, Masanori; Suetsugu, Yasushi; Yamazaki, Hiraku; Kinoshita, Masami; and Minowa, Nobuaki, 6,340,648, Cl. 501-80.000.
Suga, Yoshinori: *See*—
Sugano, Toshihiko; Iwama, Naoshi; Isobe, Eiji; Suzuki, Toru; Maruyama, Yasuo; Hayakawa, Satoshi; Shoda, Hisashi; Kashimoto, Masami; Kato, Taku; Aoshima, Takayuki; Nishimura, Sugio; Suga, Yoshinori; and Sieber, Stefan, 6,340,652, Cl. 502-118.000.
Sugai, Keiji: *See*—
Hayashi, Shinnosuke; and Sugai, Keiji, 6,341,239, Cl. 700-79.000.
Sugai, Toshiya: *See*—
Okada, Mitsumasa; Sugai, Toshiya; Honda, Yoshitaka; Ishikawa, Manabu; and Sakurai, Tomohisa, 6,340,352, Cl. 601-2.000.
Sugano, Toshihiko; Iwama, Naoshi; Isobe, Eiji; Suzuki, Toru; Maruyama, Yasuo; Hayakawa, Satoshi; Shoda, Hisashi; Kashimoto, Masami; Kato, Taku; Aoshima, Takayuki; Nishimura, Sugio; Suga, Yoshinori; and Sieber, Stefan, to Mitsubishi Chemical Corporation. Catalysts for polymerization of α-olefins, process for producing α-olefin polymers, novel transition metal compounds and catalyst components for polymerization of α-olefin. 6,340,652, Cl. 502-118.000.
Sugawara, Hideto: *See*—
Komoto, Satoshi; Nitta, Koichi; Suzuki, Nobuhiro; Konno, Kuniaki; Sugawara, Hideto; and Furukawa, Chisato, 6,340,824, Cl. 257-99.000.
Sugawara, Masumi: *See*—
Kubota, Toshio; Sugawara, Masumi; Horinaka, Takehiro; and Kimura, Fujimi, 6,340,558, Cl. 430-320.000.
Sugihara, Hideaki; and Ohkita, Koji, to Sumitomo Rubber Industries. *Pneumatic tire including two wide circumferential grooves*. 6,340,041, Cl. 152-209.500.
Sugihara, Naoki, to Kabushiki Kaisha Toshiba. X-ray computerized tomography apparatus. 6,341,152, Cl. 378-4.000.
Sugimoto, Akio: *See*—
Suzuki, Yuko; Sugimoto, Akio; Kakuda, Takami; and Ikegawa, Yasuhiko, 6,340,489, Cl. 426-489.000.
Sugimoto, Yasuhiko: *See*—
Kita, Kazuhiko; Sugimoto, Yasuhiko; Yoshimura, Yasuharu; and Fukuyama, Takahiro, 6,340,446, Cl. 420-480.000.
Sugimoto, Yukio: *See*—
Asano, Hiroshi; Sugimoto, Yukio; and *Tabata, Fusao, 6,340,390, Cl.* 117-13.000.
Sugioka, Takahiro; Kato, Takayuki; and Takamatsu, Masato, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Piston for fluid machines. 6,339,984, Cl. 92-248.000.
Sugita, Naoki, to Kel Corporation. Electrical connector. 6,340,307, Cl. 439-326.000.
Sugita, Naoki, to Kel Corporation. Electrical connector. 6,340,308, Cl. 439-326.000.
Sugiyama, Masakazu: *See*—
Suzuki, Shunichi; Sugiyama, Masakazu; Mori, Maiko; Mihara, Yasuhiro; and Yokozeki, Kenzo, 6,340,582, Cl. 435-158.000.
Sugiyama, Masami, to Fujirebio Inc. Reagent composition for measuring hydrogen sulfide and method for measuring hydrogen sulfide. 6,340,596, Cl. 436-121.000.
Sugiyama, Masaru: *See*—
Maesoba, Kazuki; Naka, Yoshio; and Sugiyama, Masaru, 6,339,871, Cl. 29-596.000.
Sugiyama, Tomio: *See*—
Nakae, Makoto; and Sugiyama, Tomio, 6,340,419, Cl. 204-429.000.
Sullivan, David: *See*—
Fahs, Kenneth; Sullivan, David; and Nooyen, Michael, 6,339,912, Cl. 53-412.000.
Sullivan, Sean: *See*—
Bryars, Brett J.; Greenberg, Michael R.; and Sullivan, Sean, 6,340,230, Cl. 353-31.000.
Sulzer Orthopedics Ltd.: *See*—
Willert, Hans-Georg; and Bider, Kurt, 6,340,370, Cl. 623-22.380.
Sumian, Chryslain; Pitre, Franck; and Mordon, Serge, to Galderma Research & Development. Device including a chromophoric composition to be applied to the skin, a method of fabricating such a device, and uses therefor. 6,340,495, Cl. 427-1.000.
Sumida, Yukihiro: *See*—
Masuda, Takeshi; Sumida, Yukihiro; and Ebi, Tsuyoshi, 6,340,999, Cl. 349-63.000.
Sumitomo Chemical Co., Ltd.: *See*—
Kurimoto, Isao; Hirata, Norihiko; Nakamura, Akihiko; and Aratake, Yuichiro, 6,340,763, Cl. 548-194.000.
Sumitomo Electric Industries, Ltd.: *See*—
Kuhara, Yoshiki; Nakanishi, Hiromi; and Terauchi, Hitoshi, 6,340,831, Cl. 257-461.000.
Namikawa, Yasuo; and Fujiwara, Shinsuke, 6,340,535, Cl. 428-650.000.
Sakurai, Wataru; Katsura, Hiroshi; Kakii, Toshiaki; and Shibata, Masahiro, 6,340,247, Cl. 385-78.000.
Yanase, Minao; and Oshiro, Yuji, 6,339,957, Cl. 73-146.000.
Sumitomo Heavy Industries, Ltd.: *See*—
Hiraoka, Kazuo, 6,340,439, Cl. 264-40.100.
Sumitomo Metal Industries, Ltd.: See—
Asano, Hiroshi; Sugimoto, Yukio; and Tabata, Fusao, 6,340,390, Cl. 117-13.000.
Tanaka, Ichiro; Yashiki, Hiroyoshi; Maeda, Mitsuyo; Nakayama, Taisei; Honjou, Noriyuki; and Mita, Shinsuke, 6,340,399, Cl. 148-308.000.
Sumitomo Metal Mining Co., Ltd.: *See*—
Fukui, Atsushi; Ando, Kouji; and Imamura, Masaki, 6,340,427, Cl. 205-688.000.
Sumitomo Rubber Industries: *See*—
Sugihara, Hideaki; and Ohkita, Koji, 6,340,041, Cl. 152-209.500.
Sumitomo Rubber Industries, Ltd.: *See*—
Ikeda, Akio, 6,340,040, Cl. 152-209.180.
Yanase, Minao; and Oshiro, Yuji, 6,339,957, Cl. 73-146.000.
Sumitomo Special Metals Co., Ltd.: *See*—
Aoki, Masaaki; and Hashimoto, Shigeo, 6,340,888, Cl. 324-319.000.
Sumitomo Wiring Systems, Ltd.: *See*—
Matsunaga, Hideki, 6,340,319, Cl. 439-761.000.
Wright, David C, 6,340,318, Cl. 439-751.000.
Sumiyama, Masahide: *See*—
Okuyama, Masatoshi; Sumiyama, Masahide; Okuzawa, Kazurou; and Fujii, Mutsufumi, 6,341,167, Cl. 381-407.000.
Summersgill, Philip; Grierson, Thomas Harvey; Ryan, Timothy George; and Carter, Neil, to Epigem Limited. Organic optical components and preparation thereof. 6,341,190, Cl. 385-130.000.
Sumner, Paul Leo: *See*—
Foo, Chek-Peng; Munch, Carl A.; Cash, Steven M.; DeZorzi, Timothy; Khairallah, Farid; Cooper, Stephen R. W.; Yeh, Huahn-Fern; and Sumner, Paul Leo, 6,341,252, Cl. 701-45.000.
Sun Microsystems, Inc.: *See*—
Dennie, Shaun, 6,341,338, Cl. 711-147.000.
Graham, James; and Evans, Jerald, 6,340,981, Cl. 345-863.000.
Joy, William N.; Tremblay, Marc; Lauterbach, Gary; and Chamdani, Joseph I., 6,341,347, Cl. 712-228.000.
Molnar, Charles E., deceased, 6,340,901, Cl. 327-19.000.
Pong, Fong, 6,341,337, Cl. 711-146.000.
Ravichandran, Hari K., 6,341,357, Cl. 714-38.000.
Shankar, Ravi; and Sudharsanan, Subramania I., 6,341,300, Cl. 708-605.000.
Tirumalai, Partha Pal; and Mahadevan, Rajagopalan, 6,341,370, Cl. 717-5.000.
Tremblay, Marc, 6,341,348, Cl. 712-239.000.
Sun, Yan; and Ye, Jun, to Onetta Inc. Optical amplifier system with transient control using spectrally filtered input. 6,341,034, Cl. 359-341.410.
Sung, Kuo-Wei, to United Microelectronics Corp. Valve handle for preventing a valve from being accidentally turned on. 6,340,148, Cl. 251-96.000.
Surgical Navigation Technologies, Inc.: *See*—
Bolger, Ciaran; Melkent, Anthony J.; and Smith, Kurt R., 6,340,363, Cl. 606-90.000.
Suwabe, Masaaki: *See*—
Maehata, Hideo; Matsumura, Yasuo; Yoshizawa, Hisae; and Suwabe, Masaaki, 6,340,549, Cl. 430-111.400.
Suzuki, Hidetomo: *See*—
Fujii, Toshiaki; Suzuki, Tsukuru; Suzuki, Hidetomo; and Sakamoto, Kazuhiko, 6,340,381, Cl. 95-63.000.
Suzuki, Hiroko: *See*—

Oka, Motohiro; Tsuchiya, Mitsuru; Nakamura, Norinaga; Takematus, Kiyotaka; Ota, Yurie; Suzuki, Hiroko; Yamashita, Natsuko; and Katagiri, Hiroomi, 6,340,404, Cl. 156-230.000.

Suzuki, Kazuhito: *See*—
Nagamura, Yoshikazu; Suzuki, Kazuhito; Hosono, Kunihiro; and Yoshioka, Nobuyuki, 6,340,543, Cl. 430-5.000.

Suzuki, Kazunari: *See*—
Miyaki, Yoshinori; Suzuki, Kazunari; and Omoda, Daisuke, 6,340,837, Cl. 257-666.000.

Suzuki, Kenichi; Tsuge, Toyokazu; and Awata, Kazutaka, to Chuo Hatsujo Kabushiki Kaisha. Cable end fastening device for a vehicular remote control cable. 6,340,265, Cl. 403-316.000.

Suzuki, Kenkichi: *See*—
Kondo, Katsumi; Terao, Hiromu; Abe, Hidetoshi; Ohta, Masuyuki; Suzuki, Kenkichi; Sasaki, Tohru; Kawachi, Genshiro; and Ohwada, Junichi, 6,341,004, Cl. 349-141.000.

Suzuki, Kunihiko: *See*—
Zhou, Changming; Suzuki, Kunihiko; Tomatsu, Takashi; and Fukui, Masataka, 6,340,942, Cl. 341-158.000.

Suzuki, Mikio; Miyamoto, Noriyuki; Shimaoka, Emi; and Takagi, Kimie, to Showa Denko Kabushiki Kaisha. Process for producing a magnetic recording medium. 6,340,505, Cl. 427-570.000.

Suzuki, Munehiro: *See*—
Takayanagi, Norikazu; Kimpara, Masaomi; and Suzuki, Munehiro, 6,340,656, Cl. 504-367.000.

Suzuki, Nobuhiro: *See*—
Furuya, Shuichi; Suzuki, Nobuhiro; Choh, Nobuo; and Nara, Yoshi, 6,340,686, Cl. 514-258.000.
Komoto, Satoshi; Nitta, Koichi; Suzuki, Nobuhiro; Konno, Kuniaki; Sugawara, Hideto; and Furukawa, Chisato, 6,340,824, Cl. 257-99.000.

Suzuki, Seiichi: *See*—
Fukumoto, Ryoichi; Yamada, Katsuhisa; Ohhashi, Masao; Suzuki, Shintaro; and Suzuki, Seiichi, 6,340,199, Cl. 296-155.000.

Suzuki, Shintaro: *See*—
Fukumoto, Ryoichi; Yamada, Katsuhisa; Ohhashi, Masao; Suzuki, Shintaro; and Suzuki, Seiichi, 6,340,199, Cl. 296-155.000.

Suzuki, Shoji: *See*—
Handa, Akio; Maki, Yuji; Suzuki, Shoji; Amaki, Kiyoshi; and Sato, Junichi, 6,340,210, Cl. 301-64.400.

Suzuki, Shunichi; Sugiyama, Masakazu; Mori, Maiko; Mihara, Yasuhiro; and Yokozeki, Kenzo, to Ajinomoto Co., Inc. Process for preparing xylitol. 6,340,582, Cl. 435-158.000.

Suzuki, Toru: *See*—
Sugano, Toshihiko; Iwama, Naoshi; Isobe, Eiji; Suzuki, Toru; Maruyama, Yasuo; Hayakawa, Satoshi; Shoda, Hisashi; Kashimoto, Masami; Kato, Taku; Aoshima, Takayuki; Nishimura, Sugio; Suga, Yoshinori; and Sieber, Stefan, 6,340,652, Cl. 502-118.000.

Suzuki, Toshiyuki: *See*—
Yamanaka, Hiroshi; Suzuki, Toshiyuki; and Nakata, Kazunobu, 6,340,923, Cl. 335-4.000.

Suzuki, Tsukuru: *See*—
Fujii, Toshiaki; Suzuki, Tsukuru; Suzuki, Hidetomo; and Sakamoto, Kazuhiko, 6,340,381, Cl. 95-63.000.

Suzuki, Yuichi: *See*—
Ueno, Kohshi; Sasaki, Atsushi; Kawano, Koki; Okabe, Tadashi; Kitazawa, Noritaka; Takahashi, Keiko; Yamamoto, Noboru; Suzuki, Yuichi; Matsunaga, Manabu; and Kubota, Atsuhiko, 6,340,759, Cl. 544-358.000.

Suzuki, Yuichiro: *See*—
Nozawa, Kenji; Ainoya, Masayuki; Fujinuma, Yoshitaka; and Suzuki, Yuichiro, 6,341,210, Cl. 399-262.000.

Suzuki, Yuko; Sugimoto, Akio; Kakuda, Takami; and Ikegawa, Yasuhiko, to Ito En, Ltd. Manufacturing process of carrot juice. 6,340,489, Cl. 426-489.000.

Suzumura, Takashi, to Toyota Jidosha Kabushiki Kaisha. Process of forming annular member from cylindrical member having radial flange at one end. 6,339,948, Cl. 72-334.000.

Svedberg, Johan, to Telefonaktiebolaget L M Ericsson (publ). Providing call centers with voice gateways. 6,341,128, Cl. 370-352.000.

Svensson, Erik: *See*—
Lehman, Anders; Svensson, Erik; Kroon, Tord; and Eriksson, Jan-Erik, 6,340,049, Cl. 164-471.000.

Svetkoff, Donald J.: *See*—
Smart, Donald V.; and Svetkoff, Donald J., 6,340,806, Cl. 219-121.620.

Svorc, Josef; Miertus, Stanislav; and Stredansky, Miroslav, to Saicom S.r.l. Electrochemical biosensors and process for their preparation. 6,340,597, Cl. 436-518.000.

Swartz, Jerome, to Symbol Technologies, Inc. Card reader and method for completing transactions. 6,340,115, Cl. 235-462.450.

Swartz, Lars-Erik: *See*—
Biegelsen, David Kalman; and Swartz, Lars-Erik, 6,340,149, Cl. 251-129.060.

Swayne, Elizabeth N.: *See*—
Deleo, Malcolm A.; Blum, Robert L.; Ochomogo, Maria G.; Pappalardo, Paul A.; and Swayne, Elizabeth N., 6,340,663, Cl. 510-438.000.

Swisher, George W., Jr.; and Zhang, Jianmin, to CMI Corporation. Drum mixer having isolated aggregate transport channels. 6,340,240, Cl. 366-25.000.

Sybase, Inc.: *See*—
MacNicol, Roger Dermot; Kirk, Steven A.; Bello, Randall George; Rao, Jun; and Yang, Katherine Tsouya, 6,341,281, Cl. 707-3.000.

Yach, David P.; Graham, James D.; and Scian, Anthony F., 6,341,288, Cl. 707-103.00R.

Symbol Technologies, Inc.: *See*—
Correa, Mark; Gelles, Rubin; He, Duanfeng; Joseph, Eugene; Li, Yajun; Patel, Mehul; and Stankelis, Thomas M., 6,340,114, Cl. 235-462.220.
He, Duanfeng; Hunter, Kevin; and Joseph, Eugene, 6,340,119, Cl. 235-494.000.
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Synaptic Pharmaceutical Corporation: *See*—
Marzabadi, Mohammad R.; Noble, Stewart A.; and Desai, Mahesh N., 6,340,683, Cl. 514-245.000.

Syngenta Limited: *See*—
Scher, Herbert B.; and Rodson, Marius, 6,340,653, Cl. 504-112.000.

Syntex (U.S.A.) Inc.: *See*—
Dvorak, Charles A.; Wren, Douglas L.; Fisher, Lawrence E.; Axt, Steven D.; Humphreys, Eric R.; Arzeno, Humberto B.; Beard, Colin C.; Nguyen, Sam Linh; Han, Yeun-Kwei; Roberts, Christopher R.; Lund, Jan P.; and Fatheree, Paul R., 6,340,756, Cl. 544-276.000.

Szabo, Paul D.: *See*—
Peeters, Eric; Noolandi, Jaan; Apte, Raj B.; Floyd, Philip D.; Small, Jonathan A.; Kovacs, Gregory J.; Lean, Meng H.; Volkel, Armin R.; Bolte, Steven B.; Shi, An-Chang; Endicott, Frederick J.; Anderson, Gregory B.; Hays, Dan A.; Kubby, Joel A.; Jackson, Warren B.; Moffat, Karen A.; McAneney, T. Brian; Veregin, Richard P. N.; *McDougall, Maria N. V.; Boils, Danielle C.; and Szabo, Paul D.*, 6,340,216, Cl. 347-21.000.

Sziklai, Anthony T.; Verma, Ashish K.; Popowski, Judith E.; Frankland, Richard; Mitchell, Christopher M.; Ferguson, Joseph D.; and Sturgeon, Douglas H., to Alternative Systems, Inc. Integrated change management unit. 6,341,287, Cl. 707-102.000.

Szlucha, Thomas F., to Xerox Corporation. Cross flow air system for ink jet printer. 6,340,225, Cl. 347-102.000.

Szmulewicz, Asher: *See*—
Rosenschein, Bob; Schneiderman, Jeff; Brief, Daniel; Bamberger, Naama; Reich, Gil; Bernstein, Uri; Rosen, Tamar; and Szmulewicz, Asher, 6,341,306, Cl. 709-217.000.

Szul, John F.: *See*—
Murray, Rex E.; Mawson, Simon; Szul, John F.; Erickson, Kersten Anne; Kwack, Tae Hoon; Karol, Frederick J.; and Schreck, David James, 6,340,730, Cl. 526-114.000.

T.A.O. Medical Technologies Ltd.: *See*—
Almog, Yael; and Toledo, Eran, 6,340,346, Cl. 600-300.000.

Tabata, Atsushi; Taga, Yutaka; Ibaraki, Ryuji; Nagano, Shuji; Nakamura, Seiji; and Amano, Masaya, to Toyota Jidosha Kabushiki Kaisha. Vehicle drive device. 6,340,339, Cl. 475-5.000.

Tabata, Fusao: *See*—
Asano, Hiroshi; Sugimoto, Yukio; and Tabata, Fusao, 6,340,390, Cl. 117-13.000.

Tachibana, Kazuhiko: *See*—
Takahashi, Yoshinobu; and Tachibana, Kazuhiko, 6,339,865, Cl. 24-136.00R.

Tada, Tsukasa: *See*—
Kihara, Naoko; Yuasa, Fumihiko; Ushirogouchi, Tohru; Tada, Tsukasa; Sasaki, Osamu; Naito, Takuya; and Saito, Satoshi, 6,340,552, Cl. 430-270.100.

Taga, Yutaka: *See*—
Tabata, Atsushi; Taga, Yutaka; Ibaraki, Ryuji; Nagano, Shuji; Nakamura, Seiji; and Amano, Masaya, 6,340,339, Cl. 475-5.000.

Tagami, Mitsuhiro; and Terao, Masayuki, to NEC Corporation. Computer fastening device. 6,340,145, Cl. 248-317.000.

Taggart, Thomas: *See*—
Keithly, James H.; Pollack, Harold; and Taggart, Thomas, 6,340,493, Cl. 426-599.000.

Tahon, Jean-Pierre: *See*—
Cloots, Tom; Van den Bogaert, Roger; Tahon, Jean-Pierre; and Louwet, Frank, 6,340,496, Cl. 427-58.000.

Tai, Kuochou; and Cai, Bo, to JDS Uniphase Corporation. Multi-plate comb filter and applications therefor. 6,341,040, Cl. 359-584.000.

Taima, Yasuo, to Konica Corporation. Silver halide photographic emulsion and silver halide photographic light-sensitive material. 6,340,562, Cl. 430-599.000.

Taira, Yoshihiko; Houki, Youji; Nakayasu, Hirofumi; and Nagatomi, Tsutomu, to Fujitsu Limited. Image forming apparatus and exposure device thereof. 6,340,982, Cl. 347-130.000.

Taiwan Semiconductor Manufacturing Company: *See*—
Liu, Ruey-Hsin; Tsai, Jun-Lin; and Hsu, Yung-Lung, 6,340,833, Cl. 257-536.000.

Taiwan Semiconductor Manufacturing Company, Ltd: *See*—
Chen, Jong; Lee, Tze-Liang; and Yang, Fan-Keng, 6,340,638, Cl. 438-687.000.
Chen, Ming-Fa; Hung, Chih-Chien; Chen, Chia-Hsiang; and Wong, Fu-Tien, 6,340,547, Cl. 430-22.000.
Chen, Yi-Jen; and Cho, Guey-Shyung, 6,340,933, Cl. 340-687.000.
Chih-Po, Huang; Hann-Huei, Tsai; and Tsung-Mu, Lai, 6,340,631, Cl. 438-618.000.

Takaba, Tetsufumi: *See*—
Nakanishi, Kazuhiro; Takano, Kunikazu; Kibayashi, Hiroshi; Nakanishi, Hiromi; Takaba, Tetsufumi; Hiroshima, Wataru; Takeda, Tsuyoshi; Aoki, Akira; and Onda, Kanichi, 6,341,200, Cl. 396-6.000.

Takabatake, Yoshiaki: *See*—
Katsube, Yasuhiro; Saito, Takeshi; Takabatake, Yoshiaki; Hashimoto, Mikio; and Tanaka, Hisako, 6,341,127, Cl. 370-352.000.

Takada, Hideaki: *See—*
Yoshida, Hiroyuki; Tawa, Hiroki; Ikuma, Tomonori; and Takada, Hideaki, 6,340,322, Cl. 440-89.000.
Takagi, Ken'ichi: *See—*
Nakagawa, Yukito; and Takagi, Ken'ichi, 6,339,997, Cl. 118-723.0AN.
Takagi, Kimie: *See—*
Suzuki, Mikio; Miyamoto, Noriyuki; Shimaoka, Emi; and Takagi, Kimie, 6,340,505, Cl. 427-570.000.
Takagi, Nobuyoshi: *See—*
Kawabata, Yasutomo; Matsuhashi, Shigeru; Takagi, Nobuyoshi; Kanamori, Akihiko; and Yamada, Eiji, 6,340,847, Cl. 290-40.00C.
Takagi, Takeshi; and Ishikawa, Toshihiro, to Mazda Motor Corporation. Airbag apparatus. 6,340,174, Cl. 280-736.000.
Takahashi, Hiroyuki: *See—*
Hosokawa, Tetsuo; Hamamura, Toshihiro; Takahashi, Hiroyuki; Iwamoto, Shigeru; Ohkura, Tadahisa; and Kaneko, Hidefumi, 6,341,202, Cl. 396-281.000.
Takahashi, Keiko: *See—*
Ueno, Kohshi; Sasaki, Atsushi; Kawano, Koki; Okabe, Tadashi; Kitazawa, Noritaka; Takahashi, Keiko; Yamamoto, Noboru; Suzuki, Yuichi; Matsunaga, Manabu; and Kubota, Atsuhiko, 6,340,759, Cl. 544-358.000.
Takahashi, Masaaki: *See—*
Yoshino, Naoto; and Takahashi, Masaaki, 6,341,205, Cl. 399-101.000.
Takahashi, Mitsuo, to Seikoh Giken Co., Ltd. Variable attenuation type optical power attenuator with latching ratchet. 6,341,191, Cl. 385-140.000.
Takahashi, Shoichi: *See—*
Tatsuno, Kimio; Yoshida, Kouji; Kato, Takeshi; Hirataka, Toshinori; Yazaki, Norihiro; Takahashi, Shoichi; and Naka, Hiroshi, 6,341,027, Cl. 359-163.000.
Takahashi, Shyouichi: *See—*
Segawa, Teruo; Matsubara, Jyun; Okuyama, Kaoru; Ueda, Yukihide; Takahashi, Shyouichi; Nakamura, Setsuo; Urakami, Kazuo; and Kishita, Shin, 6,339,874, Cl. 29-824.000.
Takahashi, Toru: *See—*
Kaneda, Takashi; and Takahashi, Toru, 6,340,182, Cl. 292-102.000.
Takahashi, Yoshinobu; and Tachibana, Kazuhiko, to YKK Corporation. Cord fastener. 6,339,865, Cl. 24-136.00R.
Takakuwa, Kei: *See—*
Tanaka, Hiroaki; Ogawa, Osamu; Kajitani, Yoshimi; Takakuwa, Kei; Ohshima, Toshiki; Mizuno, Katsutoshi; Ino, Naohito; and Ishihara, Shigeo, 6,339,967, Cl. 74-409.000.
Takamatsu, Masato: *See—*
Sugioka, Takahiro; Kato, Takayuki; and Takamatsu, Masato, 6,339,984, Cl. 92-248.000.
Takamatu, Tutomu. Deep drawing method. 6,339,949, Cl. 72-347.000.
Takamoto, Yoshifumi: *See—*
Kanai, Hiroki; Inoue, Yasuo; and Takamoto, Yoshifumi, 6,341,335, Cl. 711-137.000.
Takano, Kunikazu: *See—*
Nakanishi, Kazuhiro; Takano, Kunikazu; Kibayashi, Hiroshi; Nakanishi, Hiromi; Takaba, Tetsufumi; Hiroshima, Wataru; Takeda, Tsuyoshi; Aoki, Akira; and Onda, Kanichi, 6,341,200, Cl. 396-6.000.
Takao, Seiichi: *See—*
Kurihara, Hideshi; Takao, Seiichi; Miyajima, Kazumoto; Yamamoto, Shinya; and Takase, Toru, 6,340,443, Cl. 264-464.009.
Takaragi, Kazuo; and Kurumatani, Hiroyuki, to Hitachi, Ltd. Digital signature generating/verifying method and system using public key encryption. 6,341,349, Cl. 713-168.000.
Takasago International Corporation: *See—*
Saito, Takao; Murayama, Toshiyuki; Matsumoto, Takaji; and Miura, Takashi, 6,340,751, Cl. 540-200.000.
Takasaki, Toshinobu: *See—*
Yamaguchi, Motohiro; Takasaki, Toshinobu; and Nishida, Shin, 6,339,932, Cl. 62-114.000.
Takase, Akinori: *See—*
Shigeta, Bungo; Inoue, Akihisa; and Takase, Akinori, 6,340,042, Cl. 156-361.000.
Takase, Toru: *See—*
Kurihara, Hideshi; Takao, Seiichi; Miyajima, Kazumoto; Yamamoto, Shinya; and Takase, Toru, 6,340,443, Cl. 264-464.000.
Takata (Europe) Vehicle Safety Technology GmbH: *See—*
Kopetzky, Robert; and Kempfle, Thomas, 6,340,127, Cl. 242-382.200.
Takayanagi, Norikazu; Kimpara, Masaomi; and Suzuki, Munehiro, to American Cyanamid Co. Light, extruded compositions containing a light, extrudable, ceramic carrier, methods for their use, and processes for their preparation. 6,340,656, Cl. 504-367.000.
Takeda Chemical Industries, Ltd.: *See—*
Furuya, Shuichi; Suzuki, Nobuhiro; Choh, Nobuo; and Nara, Yoshi, 6,340,686, Cl. 514-258.000.
Marui, Shogo; Hazama, Masatoshi; Notoya, Kohei; and Kato, Koki, 6,340,704, Cl. 514-463.000.
Takeda, Kouichi: *See—*
Numata, Hideaki; and Takeda, Kouichi, 6,341,084, Cl. 365-158.000.
Takeda, Mitsuo, to Kabuki Construction Co., Ltd. Granule transfer apparatus and granule spreading method. 6,340,278, Cl. 414-140.900.
Takeda, Ryuji; Oishi, Seiichiro; and Shiomi, Tetsuhiro, to Sony Corporation. Optical disk apparatus capable of correcting the drive current waveforms of stepping motor. 6,341,103, Cl. 369-32.000.
Takeda, Satoshi: *See—*
Ebisawa, Junichi; Aomine, Nobutaka; Takeda, Satoshi; Noda, Kazuyoshi; and Decroupet, Daniel, 6,340,529, Cl. 428-432.000.
Takeda, Tsuyoshi: *See—*
Nakanishi, Kazuhiro; Takano, Kunikazu; Kibayashi, Hiroshi; Nakanishi, Hiromi; Takaba, Tetsufumi; Hiroshima, Wataru; Takeda, Tsuyoshi; Aoki, Akira; and Onda, Kanichi, 6,341,200, Cl. 396-6.000.
Takehara, Toru: *See—*
Konda, Akihiro; Ito, Kazuo; Aotuka, Kazunori; Itoh, Yuichi; Uchiyama, Akira; and Takehara, Toru, 6,340,531, Cl. 428-516.000.
Takekawa, Hiroshi: *See—*
Hachiya, Toshiyuki; Yamada, Tomoyoshi; Takekawa, Hiroshi; Kobayashi, Takuya; and Sasaki, Yuji, 6,341,051, Cl. 360-265.100.
Takematus, Kiyotaka: *See—*
Oka, Motohiro; Tsuchiya, Mitsuru; Nakamura, Norinaga; Takematus, Kiyotaka; Ota, Yurie; Suzuki, Hiroko; Yamashita, Natsuko; and Katagiri, Hiroomi, 6,340,404, Cl. 156-230.000.
Takemura, Jun: *See—*
Ueda, Katsunori; Kaihara, Kuniaki; Ando, Hiromitsu; and Takemura, Jun, 6,340,016, Cl. 123-305.000.
Takemura, Riichiro: *See—*
Sakamoto, Tatsuya; Nagashima, Osamu; and Takemura, Riichiro, 6,341,088, Cl. 365-190.000.
Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Semiconductor device and method for forming the same. 6,340,830, Cl. 257-350.000.
Takeshita, Kenji; Kohsaka, Jun; and Nagasaka, Yasushi, to Minolta Co., Ltd. Light beam optical scanner and image forming apparatus. 6,341,030, Cl. 359-216.000.
Taketomi, Nobuo: *See—*
Yoshida, Takashi; Watanabe, Masahide; and Taketomi, Nobuo, 6,340,797, Cl. 174-260.000.
Takishima, Suguru: *See—*
Nakanishi, Ryoichi; Nishikawa, Hiroshi; Takishima, Suguru; and Shinozaki, Shimpei, 6,341,106, Cl. 369-44.280.
Takizawa, Masaaki; and Endo, Satoshi, to Hitachi, Ltd. Code string editing apparatus, picture coded signal decoding apparatus and moving picture coded string decoding apparatus. 6,341,177, Cl. 382-233.000.
Takizawa, Teruyuki: *See—*
Ezawa, Kozo; Takizawa, Teruyuki; and Ueno, Shigeto, 6,341,119, Cl. 369-178.000.
Tallgren, Joni A: *See—*
Hulkkonen, Rauli T; Vuorenmaa, Jyri-Markku; and Tallgren, Joni A, 6,340,288, Cl. 415-199.100.
Tamai, Kiyoshi: *See—*
Nakazawa, Akira; Kitamura, Masakazu; Tamai, Kiyoshi; and Nagai, Makoto, 6,340,964, Cl. 345-100.000.
Tamamoto, Junichi; Yamashita, Taichiro; and Nakajima, Kichio, to Hitachi, Ltd. Paper sheet sorting apparatus and sorting method. 6,340,804, Cl. 209-584.000.
Tanabe, Tomoko: *See—*
Shirasaki, Yasuyo; Tanabe, Tomoko; and Kikuchi, Chuichi, 6,341,176, Cl. 382-229.000.
Tanaka, Akihiro: *See—*
Matsuhisa, Akira; Murakami, Takeshi; Sakuda, Shuichi; Kawano, Noriyuki; Shibasaki, Kumiko; and Tanaka, Akihiro, 6,340,678, Cl. 514-213.010.
Tanaka, Akira; Watanabe, Takuya; and Yamada, Hachiro, to NEC Corporation. Method and apparatus for displaying moving images while correcting false moving image contours. 6,340,961, Cl. 345-63.000.
Tanaka, Chihiro; Matsuo, Mutsumi; Yokouchi, Yoshio; and Ushiki, Takeyoshi, to Seiko Epson Corporation. Method for producing liquid crystal device with conductors arranged in a matrix. 6,341,005, Cl. 349-149.000.
Tanaka, Hideo: *See—*
Yagi, Yukihiro; and Tanaka, Hideo, 6,340,891, Cl. 324-551.000.
Tanaka, Hiroaki; Ogawa, Osamu; Kajitani, Yoshimi; Takakuwa, Kei; Ohshima, Toshiki; Mizuno, Katsutoshi; Ino, Naohito; and Ishihara, Shigeo, to Toyota Jidosha Kabushiki Kaisha; and Nissei Corporation. Vibration dampening hypoid gear structure. 6,339,967, Cl. 74-409.000.
Tanaka, Hiroshi: *See—*
Muranaka, Seiji; Tanaka, Hiroshi; and Hori, Yoshiyuki, 6,340,253, Cl. 396-611.000.
Tanaka, Hisako: *See—*
Katsube, Yasuhiro; Saito, Takeshi; Takabatake, Yoshiaki; Hashimoto, Mikio; and Tanaka, Hisako, 6,341,127, Cl. 370-352.000.
Tanaka, Ichiro; Yashiki, Hiroyoshi; Maeda, Mitsuyo; Nakayama, Taisei; Honjou, Noriyuki; and Mita, Shinsuke, to Sumitomo Metal Industries, Ltd. Non-oriented electrical steel sheet and method for producing the same. 6,340,399, Cl. 148-308.000.
Tanaka, Junzo: *See—*
Imura, Kohichi; Uemoto, Hideo; Hojo, Akimichi; Tanaka, Junzo; Kikuchi, Masanori; Suetsugu, Yasushi; Yamazaki, Hiraku; Kinoshita, Masami; and Minowa, Nobuaki, 6,340,648, Cl. 501-80.000.
Tanaka, Kazuaki: *See—*
Nagasaka, Akio; Miyatake, Takafumi; Fujita, Takehiro; Taniguchi, Katsumi; and Tanaka, Kazuaki, 6,341,168, Cl. 382-107.000.
Tanaka, Koji; Kitano, Kenichi; and Masuda, Toshiaki, to Matsumoto Yushi Seiyaku Co., Ltd. Chipping-resistant paint. 6,340,519, Cl. 428-327.000.
Tanaka, Shigeru: *See—*
Enomoto, Kunio; Hirano, Katsuhiko; Hayashi, Eisaku; Morinaka, Ren; Shimizu, Sadato; Kanno, Satoshi; Tanaka, Shigeru; and Ishikawa, Tetsuya, 6,341,151, Cl. 376-305.000.
Tanaka, Shoichi; and Sano, Hidekazu, to Mitutoyo Corporation. Positioning stage. 6,341,037, Cl. 359-393.000.
Tanaka, Shosuke: *See—*

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Yoshida, Teruyuki; and Tanaka, Shosuke, 6,341,194, Cl. 386-80.000.
Tanaka, Takeshi: *See*—
Anno, Kouichi; Matsuda, Masaaki; Kawamura, Tetsuya; Okawara, Hiroshi; and Tanaka, Takeshi, 6,340,963, Cl. 345-92.000.
Tanaka, Yasuhiko: *See*—
Ishiguro, Minoru; Tanaka, Yasuhiko; Iwai, Fumio; Nishitani, Yasuhiro; and Horikiri, Kazuhisa, 6,341,201, Cl. 396-56.000.
Tanaka, Yutaka: *See*—
Ochiai, Toshiyuki; Furukawa, Yosuke; Tanaka, Yutaka; Kimura, Kozo; Hirai, Makoto; Kiyohara, Tokuzo; and Nishida, Hideshi, 6,340,973, Cl. 345-534.000.
Tandri, Sudarsan, to International Business Machines Corporation. System and method for optimizing program execution in a computer system. 6,341,371, Cl. 717-5.000.
Tang, Betty: *See*—
Bjorkman, Claes H.; Yu, Min Melissa; Shan, Hongquing; Cheung, David W.; Yau, Wai-Fan; Liu, Kuowei; Chapra, Nasreen Gazala; Yin, Gerald; Moghadam, Farhad K.; Huang, Judy H.; Yost, Dennis; Tang, Betty; and Kim, Yunsang, 6,340,435, Cl. 216-72.000.
Tang, Hok K.: *See*—
Jansse, Magdalena D.; Das, Duco A. D.; and Tang, Hok K., 6,340,971, Cl. 345-327.000.
Tang, Jin-Yan: *See*—
Zhang, Zhaoda; and Tang, Jin-Yan, 6,340,749, Cl. 536-25.340.
Tang, Robert H.: *See*—
Wang, Alan E.; Nehmsmann, Louis J.; Cho, Suk H.; Tang, Robert H.; and Allison, William C., 6,340,725, Cl. 524-503.000.
Tang, Weiming; Mares, Frank; and Morgan, Robert Clark, to AlliedSignal Inc. Process for making load limiting yarn. 6,340,524, Cl. 428-364.000.
Tani, Kazuo: *See*—
Oomori, Katsumi; Yukawa, Hiroto; Yamazaki, Akiyoshi; Tani, Kazuo; Kinoshita, Yohei; and Yamada, Tomotaka, 6,340,553, Cl. 430-270.100.
Taniguchi, Katsumi: *See*—
Nagasaka, Akio; Miyatake, Takafumi; Fujita, Takehiro; Taniguchi, Katsumi; and Tanaka, Kazuaki, 6,341,168, Cl. 382-107.000.
Taniguchi, Nobuyuki: *See*—
Hirai, Etsuro; Furuya, Takumi; Saka, Masato; and Taniguchi, Nobuyuki, 6,340,028, Cl. 134-122.00R.
Taniguchi, Yukio: *See*—
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Tanino, Masato: *See*—
Okawa, Koji; Kashiwazaki, Takao; Kubota, Shuichi; Endo, Tadashi; Tanino, Masato; and Kabeshita, Akira, 6,340,132, Cl. 242-566.000.
Tanizaki, Junichi: *See*—
Yamaguchi, Naoki; Tanizaki, Junichi; Houman, Takeshi; Hattori, Toshimi; Mizoguchi, Yoshihiro; Ijima, Yoshiaki; and Kawano, Yuzo, 6,341,206, Cl. 399-103.000.
Tanner, Keith Edward; Draper, Peter Robert; Getz, John J.; Burnett, Stephen W.; and Youngblood, Elizabeth, to R.P. Scherer Technologies, Inc. Film forming compositions comprising modified starches and iota-carrageenan and methods for manufacturing soft capsules using same. 6,340,473, Cl. 424-451.000.
Tanner, Thomas M.: *See*—
Barsky, Michael F.; Tanner, Thomas M.; Slafer, Loren I.; Williams, Paul D.; Semeniuk, George B.; and Allard, Joseph M., 6,340,138, Cl. 244-165.000.
Tantawi, Asser Nasreldin: *See*—
Doganata, Yurdaer Nezihi; Marconcini, Franco; Mourad, Magda Mahmoud; Munson, Jonathan P.; Pacifici, Giovanni; and Tantawi, Asser Nasreldin, 6,341,314, Cl. 709-229.000.
Tantony, Shaun: *See*—
Eisele, Raymund; Burkart, Axel; Barrett, Paul; Ryan, Andrew; Holy, Peter; and Tantony, Shaun, 6,340,117, Cl. 235-492.000.
Tao, Hiroaki: *See*—
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Tapuz Medical Technology Ltd.: *See*—
Akiva, Sharon, 6,341,229, Cl. 600-388.000.
Tashiro, Chiaki: *See*—
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Tashiro, Hiroshi: *See*—
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Tatsuno, Kimio; Yoshida, Kouji; Kato, Takeshi; Hirataka, Toshinori; Yazaki, Norihiro; Takahashi, Shoichi; and Naka, Hiroshi, to Hitachi, Ltd. Module for optical communication. 6,341,027, Cl. 359-163.000.
Taub, Herman P., to Enhancement of Human Potential, Inc. Methods, systems and apparatuses for matching individuals with behavioral requirements and for managing providers of services to evaluate or increase individuals' behavioral capabilities. 6,341,267, Cl. 705-11.000.
Taura, Kenichi: *See*—
Tsujishita, Masahiro; Ishida, Masayuki; Taura, Kenichi; Ohkubo, Tadatoshi; and Morita, Masakazu, 6,341,123, Cl. 370-210.000.
Tawa, Hiroki: *See*—
Yoshida, Hiroyuki; Tawa, Hiroki; Ikuma, Tomonori; and Takada, Hideaki, 6,340,322, Cl. 440-89.000.
Tawaragi, Yuji, to Pioneer Corporation. Pre-pit signal detecting apparatus and information recording apparatus. 6,341,110, Cl. 369-47.200.
Taylor, Craig, to Zetex PLC. Negative feedback amplifier circuit. 6,340,918, Cl. 330-292.000.
TDK Corporation: *See*—
Arai, Michio; Kobori, Isamu; and Mitsuhashi, Etsuo, 6,340,537, Cl. 428-690.000.
Hachisuka, Nozomu; Maeda, Toshiaki; and Inage, Kenji, 6,340,885, Cl. 324-210.000.
Kawata, Tomoaki; Nakamura, Akira; Sakurai, Toshio; and Fukuhara, Aya, 6,340,649, Cl. 501-138.000.
Kubota, Toshio; Sugawara, Masumi; Horinaka, Takehiro; and Kimura, Fujimi, 6,340,558, Cl. 430-320.000.
Teadt, Rising, Burton & Associates, L.L.C.: *See*—
Potter, Terry C.; Potter, Andrew E.; and Hatas, Peter J., 6,339,952, Cl. 73-40.000.
Tearney, Guillermo J.; Bouma, Brett E.; and Webb, Robert H., to General Hospital Corporation, The. Confocal microscopy with multi-spectral encoding. 6,341,036, Cl. 359-368.000.
Techno Polymer Company Limited: *See*—
Hashitani, Ryuki; Wakao, Takeshi; Noro, Masahiko; Nagai, Hisao; and Okada, Kouji, 6,340,721, Cl. 524-109.000.
Techno21Group Corporation: *See*—
Murata, Shintaro; Honda, Tatsuyuki; Kondo, Toshihiro; and Kamimura, Teruki, 6,340,125, Cl. 241-47.000.
Technoform Caprano + Brunnhofer oHG: *See*—
Brunnhofer, Erwin; Goer, Bernhard; and Regelmann, Jürgen, 6,339,909, Cl. 52-786.130.
Technology Licensing Corporation: *See*—
Horey, Leonard I., 6,339,930, Cl. 62-73.000.
Teijin Limited: *See*—
Akamatsu, Tetsuya; and Tashiro, Chiaki, 6,340,525, Cl. 428-364.000.
Kurihara, Hideshi; Takao, Seiichi; Miyajima, Kazumoto; Yamamoto, Shinya; and Takase, Toru, 6,340,443, Cl. 264-464.000.
Telair International GmbH: *See*—
Huber, Thomas; Dürrwächter, Martin; Urch, Matthias; and Kieser, Benedikt, 6,340,085, Cl. 198-782.000.
Telecommunications Laboratories, Chunghwa Telecom Co., Ltd.: *See*—
Chen, Tsz-Lang; Leu, Guang-Ching; and Hsu, Chun-Yo, 6,340,916, Cl. 330-69.000.
Telefonaktiebolaget L M Ericsson (publ): *See*—
Andersson, Staffan; and Dagberg, Lars John Ola, 6,341,126, Cl. 370-351.000.
Svedberg, Johan, 6,341,128, Cl. 370-352.000.
Telefonaktiebolaget LM Ericsson (publ): *See*—
Eneroth, Lars Göran Vilhelm; Näsman, Karl Anders; and Petersen, Lars-Göran, 6,341,131, Cl. 370-395.000.
Johansson, Lars B.; Butovitsch, Paul Peter; and Sandin, Tomas, 6,341,124, Cl. 370-335.000.
Johansson, Ted, 6,340,618, Cl. 438-309.000.
Möster, Erik; Larsson, Paul; Olsson, Mats; Simonsson, Olof; Larsson, Mats; and Portela, Rafael, 6,341,227, Cl. 455-550.000.
Serrander, Hans; and Bäckström, Göran, 6,341,188, Cl. 385-114.000.
Temic Telefunken microelectronics GmbH: *See*—
Arndt, Wolfgang; Graff, Klaus; Hamberger, Alfons; and Heim, Petra, 6,340,642, Cl. 438-780.000.
Tenneco Automotive Inc.: *See*—
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Terada, Kouichi: *See*—
Yamagami, Hajime; Terada, Kouichi; Hayashi, Yoshihiro; Tsunehiro, Takashi; Katayama, Kunihiro; Kaki, Kenichi; and Furuno, Takeshi, 6,341,085, Cl. 365-185.090.
Terada, Yukihiro: *See*—
Higashijima, Yasuhisa; Terada, Yukihiro; and Nagaoka, Hiroshi, 6,340,880, Cl. 320-162.000.
Teranuma, Osamu: *See*—
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Terao, Hiromu: *See*—
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Terao, Masayuki: *See*—
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Terao, Motoyasu: *See*—
Miyamoto, Makoto; Terao, Motoyasu; Fukui, Yukio; Tokushuku, Nobuhiro; Andoo, Keikichi; Nishida, Tetsuya; Hirotsune, Akemi; Miyauchi, Yasushi; and Moritani, Koichi, 6,340,555, Cl. 430-270.130.
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Kuhara, Yoshiki; Nakanishi, Hiromi; and Terauchi, Hitoshi, 6,340,831, Cl. 257-461.000.
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Koduri, Sreenivasan K., 6,340,112, Cl. 228-180.500.
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Yunus, Mohammad, 6,341,091, Cl. 365-201.000.

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Benson, Terrance G., 6,339,916, Cl. 56-10.20R.

Tezuka, Hiroshi, to NEC Corporation. Parallel processing syndrome calculating circuit and Reed-Solomon decoding circuit. 6,341,297, Cl. 708-492.000.

Thaisrivongs, Suvit: *See—*
Turner, Steven Ronald; and Thaisrivongs, Suvit, 6,340,680, Cl. 514-230.200.

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Rinaldi, Peter M.; Thaxton, Edgar S.; and Castles, Gene, 6,340,851, Cl. 307-82.000.

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Archibald, G. Kent; Curran, Timothy G.; Danielson, Orland H.; Poliac, Marius O.; and Thede, Roger C., 6,340,349, Cl. 600-494.000.

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Haasen, Rolf; Wedershoven, Hans-Günter; and Theele, Bernd-Rüdiger, 6,340,129, Cl. 242-419.100.
Mund, Manfred; Haines, Michael; Iding, Michael; Forche, Torsten; Terorde, Stefan; Theele, Bernd-Rudiger; Holt, John-Adrian; and Lindemann, Heinz-Peter, 6,340,131, Cl. 242-474.000.

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Hoffman, Brian F.; and Binah, Ofer, 6,340,667, Cl. 514-2.000.

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Celeste, Anthony J.; Wozney, John M.; and Thies, R. Scott, 6,340,668, Cl. 514-12.000.

Thomas, David C.: *See—*
Curran, Thomas F., Jr.; Krywanczyk, Timothy C.; Lube, Michael S.; Moon, Matthew D.; Nadeau, Rock; Reynolds, Clark D.; Schaffer, Dean A.; Sharrow, Joel M.; Smith, Paul H., Jr.; Thomas, David C.; White, Eric J.; and Yao, Kenneth H., 6,340,601, Cl. 438-4.000.

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Alnemri, Emad S.; and Fernandez-Alnemri, Teresa, 6,340,740, Cl. 530-350.000.
Baserga, Renato; Sell, Christian; and Rubin, Raphael, 6,340,674, Cl. 514-44.000.

Thomas, Patrick R.: *See—*
Huang, James Chin-Kuang; Sipos, Peter Andrew; Kale, Lawrence Thomas; Thomas, Patrick R.; and Auger, James Arthur, 6,340,532, Cl. 428-523.000.

Thomas, Roger, to Black & Decker Inc. Lawn mower height adjustment. 6,339,918, Cl. 56-17.200.

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Hsieh, Bing R.; Yu, Yuan; Fuller, Timothy J.; Yanus, John F.; Pai, Damodar M.; Rommelmann, Heiko; Thompson, Allen J.; Stanton, Donald S.; Schlafer, Michelle L.; Kuntz, Alan R.; Kazakos, Ann M.; Wayman, William H.; and Hart, Steven C., 6,340,528, Cl. 428-412.000.

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Carey, Paul G.; Thompson, Jesse B.; and Aceves, Randy C., 6,340,403, Cl. 156-182.000.

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Thomson Licensing SA: *See—*
Allender, Jeffrey Owen; and Griepentrog, Dal Frank, 6,340,995, Cl. 348-626.000.

Thong, Tran; and Schaldach, Max, to Biotronik Mess-und Therapiegeracte GmbH & Co. Ingenieurbuero Berlin. Tripolar stimulation of heart chambers. 6,341,234, Cl. 607-9.000.

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Kaplan, Daniel Joseph; Schorr, Ralph Hartman; Allison, Ronny Lamar; and Willoughby, Barney Russell, Jr., 6,339,994, Cl. 105-404.000.

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Ferre, Maurice R.; Jakab, Peter D.; and Tieman, James S., 6,341,231, Cl. 600-424.000.

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Conn, Thomas E.; Ford, Russell; Soni, Pravin L.; Tierney, Michael J.; and Vijayakumar, Prema, 6,341,232, Cl. 604-20.000.

Tietze, Hans-Joachim, to TRW Occupant Restraint Systems GmbH & Co. KG. Hand grip bracket and assembly comprising a hand grip bracket and a head side gas bag module. 6,340,169, Cl. 280-728.200.

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Ohlert, Franz; and Tietze, Hans-Joachim, 6,340,172, Cl. 280-730.200.

Time Warner Entertainment Company L.P.: *See—*
Hayashi, Michael T., 6,340,987, Cl. 348-13.000.

Tirch, Stephen J., III: *See—*
Desai, Kamalesh S.; Husson, Brian D.; Jeanneret, Mathias P.; and Tirch, Stephen J., III, 6,340,626, Cl. 438-471.000.

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Titus, David E.: *See—*
Turner, Bruce R.; and Titus, David E., 6,340,589, Cl. 435-287.200.

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Arisawa, Shunichi; Togano, Kazumasa; Hatano, Takeshi; and Miao, Hanping, 6,340,657, Cl. 505-452.000.

Tokai Rubber Industries, Ltd.: *See—*
Kanbe, Shinobu; Kondo, Masashi; and Nishimura, Motohide, 6,340,511, Cl. 428-36.910.

Tokarski, Zbigniew: *See—*
Jubran, Nusrallah; Tokarski, Zbigniew; and Smith, Terrance P., 6,340,548, Cl. 430-58.450.

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Tokuden Co., Ltd.: *See—*
Tonomura, Toru, 6,340,811, Cl. 219-619.000.

Tokushuku, Nobuhiro: *See—*
Miyamoto, Makoto; Terao, Motoyasu; Fukui, Yukio; Tokushuku, Nobuhiro; Andoo, Keikichi; Nishida, Tetsuya; Hirotsune, Akemi; Miyauchi, Yasushi; and Moritani, Koichi, 6,340,555, Cl. 430-270.130.

Tokuyama Corporation: *See—*
Kato, Hiroshi; Mochizuki, Naoto; and Kono, Hiroyuki, 6,340,374, Cl. 51-308.000.
Momoda, Junji; and Kawabata, Yuichiro, 6,340,765, Cl. 549-330.000.

Tokyo Electron Limited: *See—*
Ueda, Issei, 6,340,643, Cl. 438-780.000.

Tokyo Ohka Kogyo Co., Ltd.: *See—*
Oomori, Katsumi; Yukawa, Hiroto; Yamazaki, Akiyoshi; Tani, Kazuo; Kinoshita, Yohei; and Yamada, Tomotaka, 6,340,553, Cl. 430-270.100.

Toledo, Eran: *See—*
Almog, Yael; and Toledo, Eran, 6,340,346, Cl. 600-300.000.

Tomahawk, Inc.: *See—*
Lane, Donald R.; Melendez, Jose A.; Munteanu, Violeta F.; and Kinney, Frederick D., 6,340,438, Cl. 252-387.000.

Tomatsu, Takashi: *See—*
Zhou, Changming; Suzuki, Kunihiko; Tomatsu, Takashi; and Fukui, Masataka, 6,340,942, Cl. 341-158.000.

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Tominaga, Junji; Nakano, Takashi; Atoda, Nobufumi; Kourogi, Motonobu; and Ohtsu, Motoichi, to Japan as represented by Secretary of Agency of Industrial Science and Technology. Variable-aperture optical near-field probe. 6,340,813, Cl. 250-216.000.

Tominaga, Mamoru: *See—*
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Tomita, Masayuki; and Nishizawa, Kimiyoshi, to Nissan Motor Co., Inc. Control for direct fuel injection spark ignition internal combustion engine. 6,340,014, Cl. 123-295.000.

Tomita, Yukiharu: *See—*
Amaike, Katsuhiro; Tomita, Yukiharu; and Nakayama, Masahiro, 6,340,275, Cl. 408-1.00R.

Tomizawa, Nobuo: *See—*
Yamashita, Michio; Abe, Hideo; Daikuzono, Yoshiharu; Emi, Shingo; and Tomizawa, Nobuo, 6,339,946, Cl. 72-173.000.

Tonai, Atsushi: *See—*
Muraguchi, Ryo; Nakashima, Akira; Tonai, Atsushi; Kimatsu, Michio; Machida, Katsuyuki; Kyuragi, Hakaru; and Imai, Kazuo, 6,340,641, Cl. 438-763.000.

Tonomura, Toru, to Tokuden Co., Ltd. Induction-heated roller device. 6,340,811, Cl. 219-619.000.

Tooltek Engineering Corporation: *See—*
Jahani, Hooshang; Bruner, Scott R.; and Smith, Peter F., 6,340,090, Cl. 211-41.100.

Toray Industries, Inc.: *See—*
Kurumatani, Hajimu; Matsuda, Susumu; and Kainoh, Mie, 6,340,693, Cl. 514-337.000.

Torigoe, Eiichi: *See—*
Makihara, Masamichi; Kuroyanagi, Isao; Nagasawa, Toshiya; and Torigoe, Eiichi, 6,339,937, Cl. 62-503.000.

Toriumi, Masaki: *See—*
Kawata, Hideaki; Ishii, Kei; Hayashi, Koichiro; Aoki, Yoshimasa; Ehira, Atsushi; Maki, Kunio; and Toriumi, Masaki, 6,340,377, Cl. 75-236.000.

Torkelson, John: *See—*
Muralidhran, N.; and Torkelson, John, 6,341,351, Cl. 713-201.000.

Torkildsen, Bernt Helge, to Framo Engineering AS. Fluid flow measurement device. 6,339,963, Cl. 73-861.630.

Torlotin, Thierry, to Alcatel. Radio modem fitted with a memory card reader. 6,341,069, Cl. 361-737.000.

Toshiba Ceramics Co., Ltd.: *See—*
Imura, Kohichi; Uemoto, Hideo; Hojo, Akimichi; Tanaka, Junzo; Kikuchi, Masanori; Suetsugu, Yasushi; Yamazaki, Hiraku; Kinoshita, Masami; and Minowa, Nobuaki, 6,340,648, Cl. 501-80.000.

Toshiba Denko Co., Ltd.: *See—*

Imura, Kohichi; Uemoto, Hideo; Hojo, Akimichi; Tanaka, Junzo; Kikuchi, Masanori; Suetsugu, Yasushi; Yamazaki, Hiraku; Kinoshita, Masami; and Minowa, Nobuaki, 6,340,648, Cl. 501-80.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Ueta, Toshihiro; and Nagashima, Kazuo, 6,341,245, Cl. 700-194.000.

Toshiba Tec Kabushiki Kaisha: *See—*
Sasagawa, Gouki; Nakamura, Tetsuya; and Ogasawara, Masato, 6,340,515, Cl. 428-192.000.

Totaku Industries, Inc.: *See—*
Amatsutsu, Hiroyuki, 6,340,181, Cl. 285-321.000.

Totalfürsvarets Forskningsinstitut: *See—*
Latypov, Nikolai; Wellmar, Ulf; and Langlet, Abraham, 6,340,780, Cl. 568-944.000.

Toubol, Gilles: See—
Benayoun, Alain; Le Pennec, Jean-Francois; Michel, Patrick; and Toubol, Gilles, 6,341,132, Cl. 370-397.000.

Touji, Hidetsugu: *See—*
Hiromaka, Hisakazu; Shimizu, Toshiharu; Majima, Yoshihide; Itoh, Toshimitsu; and Touji, Hidetsugu, 6,341,045, Cl. 360-48.000.

Toutain, Francois; Hamdi, Maher; and Rolin, Pierre, to France Telecom SA. Process for the arrangement of equitable-loss packets. 6,341,134, Cl. 370-412.000.

Tower Semiconductor Ltd.: See—
Korobov, Vladimir; Grossman, Miriam; and Rockman, Sylvie, 6,340,620, Cl. 438-396.000.

Toya, Tetsuya; Shirakura, Hidetoshi; and Kon, Junichi, to Nippon Kayaku Co., Ltd. *Process for preparing (hetero) aromatic substituted benzene* derivatives. 6,340,772, Cl. 564-5.000.

Toye, Jonathan Dallas. Plant treatment material and method. 6,339,898, Cl. 47-9.000.

Toyo Kasei Kogyo Company Limited: See—
Yamaguchi, Satoshi; Nakagawa, Satoshi; Mitsui, Sunao; and Ohno, Susumu, 6,340,539, Cl. 429-213.000.

Toyoizumi, Yoshihiko; and Iino, Chuji, to Konica Corporation. Powdery-particles supplying method and apparatus, and control method for flowing solid-state substances. 6,340,036, Cl. 141-275.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Amaike, Katsuhiro; Tomita, Yukiharu; and Nakayama, Masahiro, 6,340,275, Cl. 408-1.00R.
Hamada, Shinji; Fujioka, Noriyuki; Marukawa, Shuhei; and Eto, Toyohiko, 6,340,311, Cl. 439-429.000.
Kato, Yoshitsugu, 6,339,953, Cl. 74-512.000.
Kawabata, Yasutomo; Matsuhashi, Shigeru; Takagi, Nobuyoshi; Kanamori, Akihiko; and Yamada, Eiji, 6,340,847, Cl. 290-40.00C.
Suzumura, Takashi, 6,339,948, Cl. 72-334.000.
Tabata, Atsushi; Taga, Yutaka; Ibaraki, Ryuji; Nagano, Shuji; Nakamura, Seiji; and Amano, Masaya, 6,340,339, Cl. 475-5.000.
Tanaka, Hiroaki; Ogawa, Osamu; Kajitani, Yoshimi; Takakuwa, Kei; Ohshima, Toshiki; Mizuno, Katsutoshi; Ino, Naohito; and Ishihara, Shigeo, 6,339,967, Cl. 74-409.000.
Tanaka, Yuji; Ikushima, Yoshihiro; and Hasegawa, Masayuki, to Mimaki *Manufacturing Co., Ltd. Resist pattern, process for the formation of the* same, and process for the formation of wiring pattern. 6,340,615, Cl. 438-670.000.

Tracto-Technik Paul Schmidt Spezialmaschinen: See—
Püttmann, Franz-Josef, 6,340,270, Cl. 405-184.300.

Trainin, Zila: *See—*
Goren, Adolfo; Goldman, Walter Franklin; Trainin, Zila; and Goldman, Simon Raul, 6,340,483, Cl. 424-754.000.

Transco PLC: *See—*
Ashworth, Roger Philip, 6,339,953, Cl. 73-49.500.

Transition Optical, Inc.: *See—*
Lin, Jibin, 6,340,766, Cl. 549-389.000.

Tremblay, Marc, to Sun Microsystems, Inc. Software branch prediction filtering for a microprocessor. 6,341,348, Cl. 712-239.000.

Tremblay, Marc: See—
Joy, William N.; Tremblay, Marc; Lauterbach, Gary; and Chamdani, Joseph I., 6,341,347, Cl. 712-228.000.

Trioplast International B.V.: See—
Wammes, Jacobus Cornelis, 6,340,385, Cl. 106-287.170.

Tropicana Products, Inc.: *See—*
Keithly, James H.; Pollack, Harold; and Taggart, Thomas, 6,340,493, Cl. 426-599.000.

Trottier, Jean-Francois: *See—*
Bass, Scott; Mitchell, B. Bradley; Kane, Mohammed; and Trottier, Jean-François, 6,340,522, Cl. 428-339.000.

Truong, David, to International Business and Technology Corporation. Multi-positional advanced door security lock. 6,340,185, Cl. 292-339.000.

Trustees of Columbia University in the City of New York, The: See—
Yellin, Michael J.; Lederman, Seth; and Chess, Leonard, 6,340,459, Cl. 424-154.100.

TRW Inc.: See—
Foo, Chek-Peng; Munch, Carl A.; Cash, Steven M.; DeZorzi, Timothy; Khairallah, Farid; Cowper, Stephen R. W.; Yeh, Hsuhn-Fern; and Sumner, Paul Leo, 6,341,252, Cl. 701-45.000.
Hobaugh, James Martin, II, 6,340,162, Cl. 277-594.000.
Lin, Xing Ping, 6,340,930, Cl. 340-447.000.
McCurdy, Roger A., 6,340,928, Cl. 340-436.000.

TRW Occupant Restraint Systems GmbH & Co. KG: See—
Tietze, Hans-Joachim, 6,340,169, Cl. 280-728.200.
Ohlert, Franz; and Tietze, Hans-Joachim, 6,340,172, Cl. 280-730.200.

TRW Vehicle Safety Systems Inc.: *See—*
Davis, Michael B.; and Hayes, Garry, 6,340,170, Cl. 280-730.100.

Tsai, Jun-Lin: *See—*
Liu, Ruey-Hsin; Tsai, Jun-Lin; and Hsu, Yung-Lung, 6,340,833, Cl. 257-536.000.

Tsai, Szu-Nan; Shen, Hsiang-Hui; Dai, Hsin Kuo; and Cheng, Ku Te, to Hon Hai Precision Ind. Co., Ltd. *Induced loop antenna.* 6,340,952, Cl. 343-741.000.

Tsang, Grace: *See—*
Zerbe, Jared L.; Tsang, Grace; and Portmann, Clemenz L., 6,340,909, Cl. *327-246.000.*

Tschaeschke, Ulrich: *See—*
Hirth, Andreas; and Tschaeschke, Ulrich, 6,340,171, Cl. 280-730.200.

Tseng, Horng-Huei, to Vanguard International Semiconductor Corporation. *Method of forming a DRAM cell.* 6,340,614, Cl. *438-242.000.*

Tseng, Hsin Te: *See—*
Wang, Ching-Shun; Hsieh, Cheng-Liang; and Tseng, Hsin Te, 6,340,966, Cl. 345-163.000.

Tseng, Yuh-Kuang, to Industrial Technology Research. Low voltage low *power crystal oscillator.* 6,340,920, Cl. *331-116.0FE.*

Tsuboi, Hiroyuki: *See—*
Kobori, Takeo; Goto, Tomoko; Kondo, Hitoshi; Tsuboi, Hiroyuki; *Iiyama, Mika; Asada, Toru; and Goto, Takashi,* 6,340,697, Cl. 514-364.000.

Tsubone, Tsunehiko: *See—*
Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 6,339,887, Cl. 34-406.000.

Tsubouchi, Takao: *See—*
Nakanishi, Noriko; Yamamoto, Hisayo; Niwa, Keisuke; Yokota, Miho; Nakagawa, Yusuke; and Tsubouchi, Takao, 6,340,178, Cl. 281-45.000.

Tsuchiya, Mitsuru: See—
Oka, Motohiro; Tsuchiya, Mitsuru; Nakamura, Norinaga; Takematus, Kiyotaka; Ota, Yurie; Suzuki, Hiroko; Yamashita, Natsuko; and Katagiri, Hiroomi, 6,340,404, Cl. 156-230.000.

Tsuchiya, Takenori, to Nissin Kogyo Co., Ltd. Vehicular disk brake. 6,340,076, Cl. 188-73.450.

Tsuga, Kazuhiro: *See—*
Okada, Tomoyuki; Mori, Yoshihiro; Tsuga, Kazuhiro; Hamasaka, Hiroshi; Ishihara, Hideshi; Nakamura, Kazuhiko; and Hasebe, Takumi, 6,341,199, Cl. 386-98.000.

Tsuge, Hisanao: *See—*
Nakada, Masafumi; Tsuge, Hisanao; Tsukamoto, Yuji; Matsutera, Hisao; *Ishiwata, Nobuyuki; and Kamijo, Atsushi, 6,341,053, Cl. 360-324.200.*

Tsuge, Toyokazu: See—
Suzuki, Kenichi; Tsuge, Toyokazu; and Awata, Kazutaka, 6,340,265, Cl. *403-316.000.*

Tsui, Ting Y.; and Joo, Young-Chang, to Advanced Micro Devices, Inc. Adhesion strength testing using a depth-sensing indentation technique. 6,339,958, Cl. 73-150.000.

Tsujimoto, Takahiro; and Komata, Akinori, to Mimaki Co., Ltd. Inductive *thermal fusing device.* 6,341,211, Cl. 399-330.000.

Tsujino, Toshifumi: See—
Nagashima, Yukihito; Kawazu, Mitsuhiro; and Tsujino, Toshifumi, *6,340,646,* Cl. *501-64.000.*

Tsujishita, Masahiro; Ishida, Masayuki; Taura, Kenichi; Okkubo, Tadatoshi; and Morita, Masakazu, to Mitsubishi Denki Kabushiki Kaisha. Digital audio broadcasting receiver. 6,341,123, Cl. 370-210.000.

Tsukamoto, Yuji: *See—*
Nakada, Masafumi; Tsuge, Hisanao; Tsukamoto, Yuji; Matsutera, Hisao; Ishiwata, Nobuyuki; and Kamijo, Atsushi, 6,341,053, Cl. 360-*324.200.*

Tsukerman, Alex; Ngai, Gary C.; Putzolu, Gianfranco; and Lee, J. William, *to Oracle Corporation. Transitioning ownership of data items between* ownership groups. 6,341,340, Cl. 711-150.000.

Tsukioka, Koji, to Nakarai Chemical Industries Co., Ltd. Soluble isoflavone composition and method for preparing the same. 6,340,470, Cl. 424-439.000.

Tsukude, Masaki: See—
Yamagata, Tadato; Arimoto, Kazutami; and Tsukude, Masaki, 6,341,098, *Cl. 365-226.000.*

Tsune, Kiyoshi; and Asano, Fumiki, to Kabushiki Kaisha Kobe Seiko Sho. Mold for use in continuous metal casting. 6,340,048, Cl. 164-418.000.

Tsunehiro, Takashi: *See—*
Yamada, Yoshiaki; Tanaka, Yasuaki; Hayashi, Yoshikazu; Tsunehiro, Takashi; Kadoyama, Kunihiro; Maki, Noriyuki; and Furuno, Takeshi, 6,341,085, Cl. 365-185.090.

Tsung-Mu, Lai: See—
Chih-Po, Huang; Hann-Huei, Tsai; and Tsung-Mu, Lai, 6,340,631, Cl. *438-618.000.*

Tsunoda, Toshiyuki: *See—*
Seki, Kunio; Tsunoda, Toshiyuki; Kokami, Yasuhiko; and Kawauchi, Kunihiro, 6,340,873, Cl. 318-254.000.

Tsushima, Hideaki: *See—*
Fukashiro, Yasuyuki; Tsushima, Hideaki; and Hayashi, Yukio, 6,341,032, Cl. *359-337.000.*

Tsuura, Katsuhiko, to Matsushita Electric Industrial Co., Ltd. Contactor and semiconductor device inspecting method. 6,340,604, Cl. 438-15.000.

Tubular Fabricators Industry: See—
Battiston, Joseph, 6,340,205, Cl. 297-24.000.

Turkdogan, Ethem T. Slag oxygen sensor. 6,340,418, Cl. 204-400.000.

Turner, Bruce Joseph: *See—*

Lee, Ching-Chin; Burg, Gary Robert; Looman, Ernest Wilford, Jr.; Turner, Bruce Joseph; and Marshall, Malcolm George, 6,340,123, Cl. 239-552.000.

Turner, Bruce R.; and Titus, David E., to MJ Research, Inc. Thin-well microplate and methods of making same. 6,340,589, Cl. 435-287.200.

Turner, Jeffrey M.: See—

Glassen, Steven G.; Turner, Jeffrey M.; Ratcliff, Bruce H.; and Valley, Stephen R., 6,341,321, Cl. 710-104.000.

Turner, Steven Ronald; and Thaisrivongs, Suvit, to Pharmacia and Upjohn Company. Oxazinoquinolones useful for the treatment of viral infections. *6,340,680, Cl. 514-230.200.*

Tverskoy, Boris S.; and Gurevich, Vladimir A. Answering machine for transmitting messages to remotely accessible user account. 6,341,160, Cl. *379-88.130.*

TyCom (US) Inc.: *See—*

Puc, Andrej B., 6,341,023, Cl. 359-124.000.

Tzeng, A-Shui, to Proton Electronic Industrial Co., Ltd. Ceiling LCD mounting structure. 6,340,146, Cl. 248-317.000.

Ube Industries, Ltd.: See—

Yoshida, Hiroshi; Ohmori, Kiyoshi; Fuse, Kensaku; Morita, Kazuhiro; Onduka, Yoshitaka; and Yokota, Naoyuki, 6,340,757, Cl. 544-319.000.

Uchida, Shizumaru, to Big Born Shoji Co., Ltd. Pocket for portable telephone in clothes. 6,339,846, Cl. 2-247.000.

Uchiyama, Akira: *See—*

Konda, Akihiro; Ito, Kazuo; Aotuka, Kazunori; Itoh, Yuichi; Uchiyama, Akira; and Takehara, Toru, 6,340,531, Cl. 428-516.000.

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Comeau, Laurier E.; Vandenberg, Elis; Cargill, Edward James; Hardin, John Ransford, Jr.; Maxwell, Terrance Dean; Restau, Bryan James; Ramirez, Frank Scadoc; Walker, Colin; and Hay, Rick, 6,340,063, Cl. 175-61.000.

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Yamaguchi, Yasuo: See—
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Yamakita, Yoshimichi, to YKK Corporation. Elongated-strip-article processing. 6,340,115, Cl. 347-4.000.

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Yamamoto, Ryoichi: See—
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Yamashita, Natsuko: See—
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Yamazaki, Wataru: See—
Imura, Kohichi; Uemoto, Hideo; Hojo, Akimichi; Tanaka, Junzo; Kikuchi, Masanori; Saetagu, Yasushi; Yamazaki, Hideka; Kaneshita, Masami; and Minowa, Nobuaki, 6,340,648, Cl. 501-80.000.

Yamazaki, Nobuyuki: See—
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Yamazaki, Ryutaro; Ito, Nobuhiko; and Iwata, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Stroke identifying unit of a four-stroke engine. 6,340,020, Cl. 123-478.000.

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Chooi, Simon; Aliyu, Yakub; Zhou, Mei Sheng; Sudijono, John; Gupta, Subhash; Roy, Sudipto Ranendra; Ho, Paul; and Yi, Xu, 6,340,608, Cl. 438-108.000.

Yi, Yeanming. Phase-changeable and non-heat refrigeration process and apparatus thereof. 6,339,936, Cl. 62-335.000.

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Yokouchi, Atsushi: *See—*
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Yokouchi, Yoshio: *See—*
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Yokoyama, Hiroshi; and Higaya, Toshiaki, to Ricoh Company, Ltd. Device with induction heating roller including projecting portions at both ends and a central portion of a bobbin for maintaining a gap between an inner surface *of the heating roller and a coil on the bobbin. 6,340,810, Cl. 219-619.000.*

Yokoyama, Yasuo, to Kawasaki Steel Corporation. Rotation-resisting wire rope. 6,339,920, Cl. 57-210.000.

Yokozeki, Kenzo: *See—*
Suzuki, Shunichi; Sugiyama, Masakazu; Mori, Maiko; Mihara, Yasuhiro; and *Yokozeki, Kenzo, 6,340,582, Cl. 435-158.000.*

Yoo, Jun Yeong, to LG Electronics Inc. Plasma display panel and driving method thereof. 6,340,866, Cl. 315-169.300.

Yoo, Seung Seok, to Hyundai Electronics Industries Co., Ltd. Mask for recycling and fabrication method thereof. 6,340,541, Cl. 430-5.000.

Yoon, Jin Young, to Hyundai Microelectronics Co., Ltd. Method for forming metal line in semiconductor device. 6,340,636, Cl. 438-672.000.

Yoon, Kyung-Hwan; Lee, Jang-Jai; and Ahn, Young-Kill, to Carrier Corporation. Mounting apparatus for vehicular rooftop air conditioner. 6,339,934, Cl. 62-244.000.

Yoshida, Akihiro: *See—*
Kinoshita, Kenji; Ishihara, Hideki; Kurimoto, Akira; Matsuzaki, Haruki; Yamamoto, Ryoichi; Yoshida, Akihiro; Nakamura, Ryouta; Kobayashi, Toshiki; and Katsuro, Hajime, 6,341,063, Cl. 361-690.000.

Yoshida, Futoshi; and Shimotsu, Akihiro, to Hirose Electric Co., Ltd. Optical connector with shutter. 6,340,246, Cl. 385-73.000.

Yoshida, Hideo, to Fuji Photo Optical Co., Ltd. Rangefinder apparatus and rangefinding light-detecting device. 6,341,012, Cl. 356-3.040.

Yoshida, Hiroshi, to Japan Science and Technology Corporation. Method for synthesizing *n*-type diamond having low resistance. 6,340,393, Cl. 117-86.000.

Yoshida, Hiroshi; Ohmori, Kiyoshi; Fuse, Kensaku; Morita, Kazuhiro; Onduka, Yoshitaka; and Yokota, Naoyuki, to Ube Industries, Ltd. 6-(1-fluoroalkyl)-4-pyrimidones and processes for producing the same. 6,340,757, Cl. 544-319.000.

Yoshida, Hiroshi: *See—*
Watanabe, Kazuo; Okamuro, Toshihiko; Inoue, Toshiyasu; and Yoshida, Hiroshi, 6,340,157, Cl. 271-301.000.

Yoshida, Hiroyuki; Tawa, Hiroki; Ikuma, Tomonori; and Takada, Hideaki, to Honda Giken Kogyo Kabushiki Kaisha. Structure of mounting of exhaust gas sampling pipe in outboard engine system. 6,340,322, Cl. 440-89.000.

Yoshida, Kazunaga: *See—*
Ikebata, Yoshikazu; and Yoshida, Kazunaga, 6,341,170, Cl. 382-116.000.

Yoshida, Kouji: *See—*
Tatsuno, Kimio; Yoshida, Kouji; Kato, Takeshi; Hirataka, Toshinori; Yazaki, Norihiro; Takahashi, Shoichi; and Naka, Hiroshi, 6,341,027, Cl. 359-163.000.

Yoshida, Minoru: *See—*
Yamada, Hiromichi; Miura, Ichiro; Doi, Motomichi; Miyazaki, Osamu; and Yoshida, Minoru, 6,340,436, Cl. 252-301.450.

Yoshida, Suguru: *See—*
Enomoto, Kouji; and Yoshida, Suguru, 6,340,200, Cl. 296-189.000.
Enomoto, Kouji; and Yoshida, Suguru, 6,340,203, Cl. 296-203.020.

Yoshida, Tadashi, to Canon Kabushiki Kaisha. Image processing apparatus for retrieving moving image data. 6,341,294, Cl. 707-501.100.

Yoshida, Takashi; Watanabe, Masahide; and *Taketomi, Nobuo, to Fujitsu* Limited. Printed circuit board having signal patterns of varying widths. 6,340,797, Cl. 174-260.000.

Yoshida, Teruyuki; and Tanaka, Shosuke, to Sony Corporation. Video signal transmission apparatus. 6,341,194, Cl. 386-80.000.

Yoshimura, Yasuharu: See—
Kita, Kazuhiko; Sugimoto, Yasuhiko; Yoshimura, Yasuharu; and Fukuyama, Takahiro, 6,340,446, Cl. 420-480.000.

Yoshino, Naoto; and Takahashi, Masaaki, to Fuji Xerox Co., Ltd. Image forming apparatus with cleaning bias feature. 6,341,205, Cl. 399-101.000.

Yoshinobu, Tomoaki: *See—*
Rimoto, Shiyu; and Yoshinobu, Tomoaki, 6,340,332, Cl. 463-31.000.

Yoshioka, Nobuyuki: See—
Nagamura, Yoshikazu; Suzuki, Kazuhito; Hosono, Kunihiro; and Yoshioka, Nobuyuki, 6,340,543, Cl. 430-5.000.

Yoshioka, Toshihiko: *See—*
Ikeda, Shin; Yoshioka, Toshihiko; and Nankai, Shiro, 6,340,428, Cl. *205-777.500.*

Yoshizawa, Hisae: *See—*
Maehata, Hideo; Matsumura, Yasuo; Yoshizawa, Hisae; and Suwabe, Masaaki, 6,340,549, Cl. 430-111.400.

Yost, Dennis: See—
Bjorkman, Claes H.; Yu, Min Melissa; Shan, Hongquing; Cheung, David W.; Yau, Wai-Fan; Liu, Kuowei; Chapra, Nasreen Gazala; Yin, Gerald; Moghadam, Farhad K.; Huang, Judy H.; Yost, Dennis; Tang, Betty; and Kim, Yunsang, 6,340,435, Cl. 216-72.000.

Yotoriyama, Hiroaki: See—
Oishi, Masuya; Konishi, Teruaki; Yotoriyama, Hiroaki; and Iguchi, Tadashi, 6,340,330, Cl. 463-8.000.

Youden, Katharine E.; Arnone, David F.; Wallace, Mona; and Shine, Robert, to New Focus. Near-visible light detection method and apparatus. *6,340,820, Cl. 250-484.400.*

Young, Craig D. Motorized clamp device. 6,340,154, Cl. 269-246.000.

Young, Richard H., Sr.: See—
Hansen, Michael R.; and Young, Richard H., Sr., 6,340,411, Cl. 162-173.000.

Youngblood, Elizabeth: See—
Tanner, Keith Edward; Draper, Peter Robert; Getz, John J.; Burnett, Stephen W.; and Youngblood, Elizabeth, 6,340,473, Cl. 424-451.000.

Younger, Gilbert W. System for sealing relatively movable elements. *6,340,160, Cl. 277-447.000.*

Yozan Inc.: *See—*
Zhou, Changming; Suzuki, Kunihiko; Tomatsu, Takashi; and Fukui, Masataka, 6,340,942, Cl. 341-158.000.

Yu, Ching: *See—*
Haubursin, Pierre; and Yu, Ching, 6,340,898, Cl. 326-49.000.

Yu, Ho-Yuan. Wafer-scale packing processes for manufacturing integrated circuit (IC) packages. 6,341,070, Cl. 361-760.000.

Yu, Min Melissa: *See—*
Bjorkman, Claes H.; Yu, Min Melissa; Shan, Hongquing; Cheung, David *W.; Yau, Wai-Fan; Liu, Kuowei; Chapra, Nasreen Gazala; Yin, Gerald;* Moghadam, Farhad K.; Huang, Judy H.; Yost, Dennis; Tang, Betty; and Kim, Yunsang, 6,340,435, Cl. 216-72.000.

Yu, Yuan: *See—*
Hsieh, Bing R.; Yu, Yuan; Fuller, Timothy J.; Yanus, John F.; Pai, *Damodar M.; Rommelmann, Heiko; Thompson, Allen J.; Stanton,* Donald S.; Schlafer, Michelle L.; Kuntz, Alan R.; Kazakos, Ann M.; Wayman, William H.; and Hart, Steven C., 6,340,528, Cl. 428-412.000.

Yuasa, Fumihiko: *See—*
Kihara, Naoko; Yuasa, Fumihiko; Ushirogouchi, Tohru; Tada, Tsukasa; Sasaki, Osamu; Naito, Takuya; and Saito, Satoshi, 6,340,552, Cl. 430-270.100.

Yuen, Henry C.: *See—*
Mankovitz, Roy J.; and Yuen, Henry C., 6,341,195, Cl. 386-83.000.

Yukawa, Hiroto: *See—*
Oomori, Katsumi; Yukawa, Hiroto; Yamazaki, Akiyoshi; Tani, Kazuo; Kinoshita, Yohei; and Yamada, Tomotaka, 6,340,553, Cl. 430-270.100.

Yun, Young Woo: *See—*
Hong, Sung Kwon; Kwon, Sung Lark; Yun, Young Woo; and Kim, Ki Jun, 6,341,125, Cl. 370-335.000.

Yung, Kar W.: *See—*
Chang, Donald C. D.; Yung, Kar W.; Novak, John I., III; and Goliff, William, 6,340,947, Cl. 342-357.010.

Yunogami, Takashi: *See—*
Fukada, Shinichi; Nojiri, Kazuo; Yunogami, Takashi; Hotta, Shoji; Aoki, Hideo; Oshima, Takayuki; and Kobayashi, Nobuyoshi, 6,340,632, Cl. 438-622.000.

Yunus, Mohammad, to Texas Instruments Incorporated. Method and system for testing a bit cell in a memory array. 6,341,091, Cl. 365-201.000.

Z-Man Corporation: *See—*
Zerfas, Gerald B., 6,340,096, Cl. 222-1.000.

Zalacain, Magdalena: *See—*
Ingraham, Karen Anne; So, Chi Yong; Van Horn, Stephanie; Chalker, Alison Francis; Holmes, David John; Biswas, Sanjoy; Brown, James Raymond; Burnham, Martin Karl Russel; Warren, Patrick Vernon; Warren, Richard Lloyd; and Zalacain, Magdalena, 6,340,564, Cl. 435-6.000.

Zambelli, Benito: *See—*
Zambelli, Sergio; and Zambelli, Benito, 6,339,903, Cl. 52-167.100.

Zambelli, Sergio; and Zambelli, Benito. Supporting device for prefabricated building components, particularly for prefabricated units made of concrete or the like, with high resistance to earthquakes. 6,339,903, Cl. 52-167.100.
Zambon Group S.p.A.: *See—*
Napoletano, Mauro; Norcini, Gabriele; Grancini, Giancarlo; Pettacini, Franco; and Morazzoni, Gabriele. 6,340,684, Cl. 514-248.000.
Zanzig, David John: *See—*
Sandstrom, Paul Harry; Geiser, Joseph Frank; Chu, Judy; Zanzig, David John; and Bauer, Richard George. 6,340,727, Cl. 525-191.000.
Zapp, Thomas, to Mannesmann VDO AG. Fuel tank. 6,340,093, Cl. 220-86.100.
Zardi, Federico: *See—*
Pagani, Giorgio; and Zardi, Federico. 6,340,451, Cl. 423-359.000.
Zars, Inc.: See—
Zhang, Jie; and Zhang, Hao, 6,340,472, Cl. 424-448.000.
Zeidler, Hubert: *See—*
Pierer, Wolfgang; and Zeidler, Hubert. 6,340,362, Cl. 606-71.000.
Zeniya Aluminum Engineering, Limited: See—
Handa, Akio; Maki, Yuji; Suzuki, Shoji; Amaki, Kiyoshi; and Sato, Junichi, 6,340,210, Cl. 301-64.400.
Zeno, John R., deceased: *See—*
Goodman, Mark A; Bishop, William; Zeno, John R., deceased; and Mabbs-Zeno, by Linda, executrix. 6,339,961, Cl. 73-593.000.
Zepeda, Caroline: See—
McKay, Kerry N; Yamamoto, Junji; Osmus, James M; Zepeda, Caroline; Hay, Mark A; Escobedo, Victor T; and Kline, Daniel S. 6,340,256, Cl. 400-624.000.
Zerbe, Jared L.; Tsang, Grace; and Portmann, Clemenz L., to Rambus Inc. *Method and apparatus for phase interpolation. 6,340,909, Cl. 327-246.000.*
Zerfas, Gerald B., to Z-Man Corporation. Inverting spring assembly. 6,340,096, Cl. 222-1.000.
Zetex PLC: *See—*
Taylor, Craig. 6,340,918, Cl. 330-292.000.
Zetterström, Olle: See—
Blomlöf, Leif; Lindskog, Sven; and Zetterström, Olle. 6,340,455, Cl. 424-9.810.
Zhai, Shumin; and Partin, Phillip Edward, to International Business Machines Corporation. Multiplexing control device and method for electronic systems. *6,340,800, Cl. 200-5.00R.*
Zhang, Hao: *See—*
Zhang, Jie; and Zhang, Hao, 6,340,472, Cl. 424-448.000.
Zhang, Jack: *See—*
Zhou, Yuanda; Han, Li; Zhang, Jack; Xue, James; Xiang, Mike; and Bao, Kun, *6,340,083, Cl. 198-370.090.*
Zhang, Jianmin: *See—*
Swisher, George W., Jr.; and Zhang, Jianmin, 6,340,240, Cl. 366-25.000.
Zhang, Jie; and Zhang, Hao, to Zars, Inc. Method for reducing onset time of pharmaceutically active compounds. 6,340,472, Cl. 424-448.000.
Zhang, Mingbao; Kocur, Michael A.; and Martin, Mary Frances, to Allied-Signal Inc. Preparation of halogenated primary amines. 6,340,773, Cl. 564-384.000.
Zhang, Zhaoda; and Tang, Jin-Yan, to Avecia Biotechnology Inc. Preparation of nucleoside phosphoramidites and oligonucleotide synthesis. 6,340,749, Cl. 536-25.340.
Zhao, Cangsang; and Greason, Jeffrey K., to Intel Corporation. Method and apparatus for data capture using latches, delays, parallelism, and synchronization. 6,341,326, Cl. 711-104.000.
Zhao, Weizhong: *See—*
Liu, Chu-heng; and Zhao, Weizhong, 6,341,208, Cl. 399-237.000.
Zheng, Qinghua: *See—*
Wever, Utz; Zheng, Qinghua; and Fröhlich, Norbert, 6,341,364, Cl. 716-7.000.
Zheng, Tang: *See—*
Nguyen, Michael Anh; Zheng, Tang; and Kiong, Low Kok, 6,341,114, Cl. 369-77.100.
Zhishin, LLC: See—
Jones, Dennis, 6,340,481, Cl. 424-736.000.
Jones, Dennis, 6,340,482, Cl. 424-736.000.
Zhong, Rui-Kun: *See—*
Ball, Edward D.; and Zhong, Rui-Kun, 6,340,569, Cl. 435-7.200.
Zhou, Changming; Suzuki, Kunihiko; Tomatsu, Takashi; and Fukui, Masataka, to Yozan Inc. Analog to digital converter. 6,340,942, Cl. 341-158.000.
Zhou, Mei Sheng: *See—*
Chou, Simon; Miya, Yakuto; Zhou, Mei Sheng; Sudijono, John; Gupta, Subhash; Roy, Sudipto Ranendra; Ho, Paul; and Yi, Xu, 6,340,608, Cl. 438-108.000.
Zhou, Xiao Bo, to SKF Engineering & Research Centre B.V. Stainless steel. 6,340,400, Cl. 148-605.000.
Zhou, Yuanda; Han, Li; Zhang, Jack; Xue, James; Xiang, Mike; and Bao, Kun, to Shenzhen CIMC-Tianda Airport Support Ltd. Transmission wheel and a platform transmission apparatus formed by said wheels. 6,340,083, Cl. 198-370.090.
Zhu, Wei: See—
Brown, Walter L.; Jin, Sungho; and Zhu, Wei, 6,340,822, Cl. 257-25.000.
Zielke, Joerg: See—
Hauser, Manfred; Alaze, Norbert; Merklein, Dieter; Schuller, Wolfgang; *Bayrhof, Julius; Kremsreiter, Walter; Evertz, Joachim; Zielke, Joerg;* Zitzelsberger, Ralf; Weh, Andreas; Allenzon, Bernd; and Hellebrandt, Michael, 6,340,295, Cl. 417-470.000.
Zilog, Ind.: *See—*
Leith, James W., 6,340,903, Cl. 327-94.000.
Zimmer, Vincent J.: See—
Thompson, Mark J.; and Zimmer, Vincent J., 6,341,342, Cl. 711-166.000.
Zimmerman-Wilson, Carrie Ann: See—
Anderson, Frank Elbert, III; Brown, Jonathan Miles; Coughlin, Philip Edward; Homans, Steven William; Weller, Charles Tobias; Zimmerman-Wilson, Carrie Ann; and Oliver, Eddie James, Jr., 6,340,578, Cl. 435-71.100.
Zink, Ralf: *See—*
Elli, Marina; Zink, Ralf; Marchesini-Huber, Barbara; and Reniero, Roberto, 6,340,585, Cl. 435-252.900.
Zirkzee, Hendricus Franciscus: See—
Coenen, Nicolaas Petrus Maria; Gerritsen, Jan Cornelis; Grootveld, Rolf; Oyevaar, Martin Herke; Vandenbussche, Raimund Frans; and Zirkzee, Hendricus Franciscus, 6,340,736, Cl. 528-196.000.
Zitting, Gordon T.; and Hagen, Todd, to Macrotech Polyseal, Inc. Machinery seal. 6,340,161, Cl. 277-459.000.
Zitzelsberger, Ralf: *See—*
Hauser, Manfred; Alaze, Norbert; Merklein, Dieter; Schuller, Wolfgang; Bayrhof, Julius; Kremsreiter, Walter; Evertz, Joachim; Zielke, Joerg; Zitzelsberger, Ralf; Weh, Andreas; Allenzon, Bernd; and Hellebrandt, Michael, 6,340,295, Cl. 417-470.000.
Zosimadis, Peter. Faucet and system for use with a faucet. 6,340,032, Cl. 137-552.000.
Zou, Xingyu: *See—*
Wilner, Alan E.; Smith, David A.; Cai, Jin-Xin; Feng, Kai-Ming; Zou, Xingyu; and Huang, Shouhua, 6,341,021, Cl. 359-124.000.
Zwinkels, Marco: *See—*
Piirhonen, Anders; Zwinkels, Marco; Rolander, Ulf; and Weinl, Gerold, 6,340,445, Cl. 420-417.000.
3Com Corporation: *See—*
Fawal, Marwan A.; Lo, Burton B.; and Pan, Anthony L., 6,341,135, Cl. 370-419.000.
3M-Innovative Properties Company: *See—*
Goeb, Siegfried R.; and Graichen, Andreas H., 6,340,719, Cl. 522-174.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22nd DAY OF JANUARY, 2002

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aisin Seiki Kabushiki Kaisha: *See*—
Karnopp, Dean C.; and Yasui, Yoshiyuki, RE. 37,522, Cl. 303-146.000.

Aponte, Rene R.: *See*—
Hardigg, James S.; and Aponte, Rene R., RE. 37,518, Cl. 16-438.000.

Bondet, Pierre N. Eyeglasses having interchangeable lenses and attachment clips. RE. 37,523, Cl. 351-41.000.

Buttolo, Pietro: *See*—
Hannaford, Blake; and Buttolo, Pietro, RE. 37,528, Cl. 700-264.000.

Celanese Acetate LLC: *See*—
Flint, John Anthony; Jaffe, Michael; Haider, M. Ishaq; DiBiase, Joseph J.; and Cornetta, John Edward, RE. 37,526, Cl. 428-364.000.

Copeland Corporation: *See*—
Williamson, Warren G., RE. 37,520, Cl. 148-321.000.

Cornetta, John Edward: *See*—
Flint, John Anthony; Jaffe, Michael; Haider, M. Ishaq; DiBiase, Joseph J.; and Cornetta, John Edward, RE. 37,526, Cl. 428-364.000.

Decker, Derek Edward: *See*—
Densberger, John Ashley; and Decker, Derek Edward, RE. 37,519, Cl. 33-263.000.

Densberger, John Ashley; and Decker, Derek Edward. Golf club with optical alignment system. RE. 37,519, Cl. 33-263.000.

DiBiase, Joseph J.: *See*—
Flint, John Anthony; Jaffe, Michael; Haider, M. Ishaq; DiBiase, Joseph J.; and Cornetta, John Edward, RE. 37,526, Cl. 428-364.000.

Flint, John Anthony; Jaffe, Michael; Haider, M. Ishaq; DiBiase, Joseph J.; and Cornetta, John Edward, to Celanese Acetate LLC. Process for making high denier filaments of thermotropic liquid crystalline polymers and compositions thereof. RE. 37,526, Cl. 428-364.000.

Haider, M. Ishaq: *See*—
Flint, John Anthony; Jaffe, Michael; Haider, M. Ishaq; DiBiase, Joseph J.; and Cornetta, John Edward, RE. 37,526, Cl. 428-364.000.

Hakuta, Takashi; Tojo, Tetsuo; Kawasaki, Masaaki; and Hosoya, Mikio, to Mitsu Chemicals. Heat-resistant rubber composition. RE. 37,527, Cl. 525-343.000.

Hannaford, Blake; and Buttolo, Pietro, to Immersion Corporation. Direct-drive manipulator for pen-based force display. RE. 37,528, Cl. 700-264.000.

Hardigg Industries, Inc.: *See*—
Hardigg, James S.; and Aponte, Rene R., RE. 37,518, Cl. 16-438.000.

Hardigg, James S.; and Aponte, Rene R., to Hardigg Industries, Inc. Lightweight handle. RE. 37,518, Cl. 16-438.000.

Hemming, Val G.: *See*—
Prince, Gregory A.; and Hemming, Val G., RE. 37,525, Cl. 424-45.000.

Henry M. Jackson Foundation: *See*—
Prince, Gregory A.; and Hemming, Val G., RE. 37,525, Cl. 424-45.000.

Hewlett-Packard Company: *See*—
Khovaylo, Modest, RE. 37,517, Cl. D14-441.000.

Hosoya, Mikio: *See*—
Hakuta, Takashi; Tojo, Tetsuo; Kawasaki, Masaaki; and Hosoya, Mikio, RE. 37,527, Cl. 525-343.000.

Immersion Corporation: *See*—
Hannaford, Blake; and Buttolo, Pietro, RE. 37,528, Cl. 700-264.000.

Jaffe, Michael: *See*—
Flint, John Anthony; Jaffe, Michael; Haider, M. Ishaq; DiBiase, Joseph J.; and Cornetta, John Edward, RE. 37,526, Cl. 428-364.000.

Kabushiki Kaisha Toshiba: *See*—
Taguchi, Toyoki, RE. 37,524, Cl. 372-29.011.

Karnopp, Dean C.; and Yasui, Yoshiyuki, to Aisin Seiki Kabushiki Kaisha. Brake controlling system. RE. 37,522, Cl. 303-146.000.

Kawasaki, Masaaki: *See*—
Hakuta, Takashi; Tojo, Tetsuo; Kawasaki, Masaaki; and Hosoya, Mikio, RE. 37,527, Cl. 525-343.000.

Khovaylo, Modest, to Hewlett-Packard Company. Portion of an optical scanner. RE. 37,517, Cl. D14-441.000.

Laurash, David F.; and Taylor, George T., to Standard Register Company, The. Multipurpose tuck label/form. RE. 37,521, Cl. 283-79.000.

Mitsu Chemicals: *See*—
Hakuta, Takashi; Tojo, Tetsuo; Kawasaki, Masaaki; and Hosoya, Mikio, RE. 37,527, Cl. 525-343.000.

Prince, Gregory A.; and Hemming, Val G., to Henry M. Jackson Foundation. Method for treating infectious respiratory diseases. RE. 37,525, Cl. 424-45.000.

Standard Register Company, The: *See*—
Laurash, David F.; and Taylor, George T., RE. 37,521, Cl. 283-79.000.

Taguchi, Toyoki, to Kabushiki Kaisha Toshiba. Device for driving a semiconductor laser by a plurality of driving elements. RE. 37,524, Cl. 372-29.011.

Taylor, George T.: *See*—
Laurash, David F.; and Taylor, George T., RE. 37,521, Cl. 283-79.000.

Tojo, Tetsuo: *See*—
Hakuta, Takashi; Tojo, Tetsuo; Kawasaki, Masaaki; and Hosoya, Mikio, RE. 37,527, Cl. 525-343.000.

Williamson, Warren G., to Copeland Corporation. Gray cast iron system for scroll machines. RE. 37,520, Cl. 148-321.000.

Yasui, Yoshiyuki: *See*—
Karnopp, Dean C.; and Yasui, Yoshiyuki, RE. 37,522, Cl. 303-146.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Texas Industries, Inc.: *See*—
Young, Rom D., B1 494,515, Cl. 106-756.000.

Young, Rom D., to Texas Industries, Inc. Method and apparatus for using blast-furnace slag in cement clinker production. B1 494,515, Cl. 106-756.000.

LIST OF DESIGN PATENTEES

Andujar, Mina, to Design Ideas, Ltd. Mesh file drawer. 453,027, Cl. D19-90.000.

Armando, John E.: *See*—
Prince, Michael D.; Kim, Tong Jin; Sassone, Richard L.; Armando, John E.; and Bruns, Nicolaus, III, 452,996, Cl. D7-395.000.

Asscher, Edward, to Koninklijke Asscher Diamant, Maatschappij B.V. Diamond. 453,007, Cl. D11-90.000.

B & W Loudspeakers Limited: *See*—
Nevill, Stuart Michael; and Warren, Morten Villiers, 453,016, Cl. D14-214.000.

Baier, Bruce A.: *See*—
Vande Steeg, David J.; Middleswart, Andrew W.; Van Klompenburg, Marlo G.; Baier, Bruce A.; Wilgus, Frank R.; and Vetter, Gregory J., 452,999, Cl. D8-343.000.

Barry, Michael Peter. Picture frame. 452,995, Cl. D6-300.000.

Baumer, Lorenz Maria, to Dinh Van. Wrist-watch. 453,005, Cl. D10-32.000.

Berman, Ronald H. Opaque top scalloped bottom flexible beverage container. 453,001, Cl. D9-305.000.

BIC Corporation: *See*—
DeLuca, Donald A.; Kent, Michael; and Mitra, John N., 453,028, Cl. D19-93.000.

Bonnemere, Patrick, to Cébé International S.A. Sunglasses. 453,024, Cl. D16-309.000.

Bruns, Nicolaus, III: *See*—
Prince, Michael D.; Kim, Tong Jin; Sassone, Richard L.; Armando, John E.; and Bruns, Nicolaus, III, 452,996, Cl. D7-395.000.

Buckley, Thomas L.; and Muri, John I. Tablet splitting apparatus. 453,044, Cl. D24-220.000.

Canady, Henry. Oil or fuel filter cap. 453,011, Cl. D12-197.000.

Carriage Works, Inc.: *See*—
Cunningham, Roy Curtis, 453,013, Cl. D12-209.000.

Cartier International B.V.: *See*—
LePeu, Richard; and Diltoer, Jacques, 453,006, Cl. D10-126.000.
Cébé International S.A.: *See*—
Bonnemere, Patrick, 453,024, Cl. D16-309.000.
Chef' n Corporation: *See*—
Holcomb, David A.; Stewart, Joshua R.; and Ryding, Peter A., 452,997, Cl. D7-679.000.
Chen, Jian Qian. Health-diet sandal. 452,989, Cl. D2-918.000.
Chen, Ting-Hsing, to Far Great Plastics Industrial Co., Ltd. Wheel frame. 453,012, Cl. D12-209.000.
Chou, Ming-Hsun: *See*—
Ma, Chih-Peng; and Chou, Ming-Hsun, 453,018, Cl. D14-318.000.
Coakley, Michael: *See*—
Frisina, Ralph; Coakley, Michael; and Winstanley, Nathan B., 453,036, Cl. D21-712.000.
Frisina, Ralph; Coakley, Michael; and Winstanley, Nathan B., 453,037, Cl. D21-712.000.
Compal Electronics Inc.: *See*—
Ma, Chih-Peng; and Chou, Ming-Hsun, 453,018, Cl. D14-318.000.
Cunningham, Roy Curtis, to Carriage Works, Inc. Motorcycle wheel front face. 453,013, Cl. D12-209.000.
Davis, Glinda L. Decorative potty chair. 453,040, Cl. D23-297.000.
DeLuca, Donald A.; Kent, Michael; and Mitra, John N., to BIC Corporation. Ink bottle. 453,028, Cl. D19-93.000.
Design Ideas, Ltd.: *See*—
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NOTE—First number, class; second number, subclass; third number, patent number

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CLASS 134

2 6,340,395
122 R 6,340,028

CLASS 136

201 6,340,787
261 6,340,788
263 6,340,789

CLASS 137

1 6,340,029
403 6,340,030
513.3 6,340,031
552 6,340,032
563 6,340,033
883 6,340,034

CLASS 138

96 R 6,340,035

CLASS 141

275 6,340,036
316 6,340,037
333 6,340,038

CLASS 144

253.2 6,340,039

CLASS 148

23 6,340,396
104 6,340,397
279 6,340,398
308 6,340,399
321 RE. 37,520
605 6,340,400

CLASS 149

109.6 6,340,401

CLASS 152

209.18 6,340,040
209.5 6,340,041

CLASS 156

92 6,340,402
182 6,340,403
230 6,340,404
345 6,340,405
361 6,340,042
382 6,340,043
442.1 6,340,406
443 6,340,044
499 6,340,045

CLASS 160

135 6,340,046

CLASS 162

5 6,340,407
20 6,340,408
52 6,340,409
62 6,340,410
173 6,340,411
198 6,340,412
361 6,340,413

CLASS 164

137 6,340,047
418 6,340,048
471 6,340,049

CLASS 165

133 6,340,050
159 6,340,051
166 6,340,052
167 6,340,053
6,340,054
174 6,340,055
185 6,340,056

CLASS 166

337 6,340,057

CLASS 169

26 6,340,058
37 6,340,059
43 6,340,060

CLASS 172

41 6,340,061

CLASS 174

45 R 6,340,790
52.1 6,340,791
52.4 6,340,792
6,340,793
73.1 6,340,794
117 FF 6,340,795
255 6,340,796
260 6,340,797
261 6,340,798

CLASS 175

58 6,340,062
61 6,340,063
385 6,340,064

CLASS 177

238 6,340,799

CLASS 180

7.2 6,340,065
54.1 6,340,066
206 6,340,067

CLASS 181

207 6,340,068
272 6,340,069

CLASS 182

82 6,340,070
100 6,340,071

CLASS 184

5.1 6,340,072

CLASS 187

309 6,340,073

CLASS 188

26 6,340,074
71.7 6,340,075
73.45 6,340,076
156 6,340,077
166 6,340,078
218 A 6,340,079
267.2 6,340,080
322.15 6,340,081

CLASS 194

317 6,340,082

CLASS 198

370.09 6,340,083
435 6,340,084
782 6,340,085

CLASS 200

5 R 6,340,800
18 6,340,801
43.17 6,340,802
344 6,340,803

CLASS 203

49 6,340,414

CLASS 204

192.12 6,340,415
6,340,416
192.17 6,340,417
400 6,340,418
429 6,340,419
529 6,340,420

CLASS 205

133 6,340,421
137 6,340,422
600 6,340,423
645 6,340,424
655 6,340,425
687 6,340,426
688 6,340,427
777.5 6,340,428

CLASS 206

307.1 6,340,086
523 6,340,087
720 6,340,088

CLASS 208

87 6,340,429
89 6,340,430

CLASS 209

584 6,340,804

CLASS 210

85 6,340,431
198.2 6,340,432
388 6,340,089
651 6,340,433

CLASS 211

41.1 6,340,090
59.2 6,340,091
169 6,340,092

CLASS 216

38 6,340,434
72 6,340,435

CLASS 219

58 6,340,805
121.62 6,340,806
429 6,340,807
433 6,340,808
543 6,340,809
619 6,340,810
6,340,811

CLASS 220

86.1 6,340,093

CLASS 221

79 6,340,094
130 6,340,095

CLASS 222

1 6,340,096
12.9 6,340,097
56 6,340,098
78 6,340,099
105 6,340,100
203 6,340,101
321.2 6,340,102
402.15 6,340,103

CLASS 223

94 6,340,104

CLASS 224

404 6,340,105
405 6,340,106

CLASS 228

4.1 6,340,107
102 6,340,108
103 6,340,109
179.1 6,340,110
180.22 6,340,111
180.5 6,340,112
248.5 6,340,113

CLASS 235

462.22 6,340,114
462.45 6,340,115
492 6,340,116
6,340,117
494 6,340,118
6,340,119

CLASS 239

59 6,340,120
533.4 6,340,121
548 6,340,122
552 6,340,123

CLASS 241

37.5 6,340,124
47 6,340,125

CLASS 242

160.2 6,340,126
382.2 6,340,127
413.5 6,340,128
419.1 6,340,129
420.6 6,340,130
474 6,340,131
566 6,340,132

CLASS 244

6 6,340,133
45 R 6,340,134
53 B 6,340,135
118.1 6,340,136
165 6,340,137
6,340,138

CLASS 246

292 6,340,139
454 6,340,140

CLASS 248

49 6,340,141
74.1 6,340,142
154 6,340,143
205.1 6,340,144
317 6,340,145
6,340,146
530 6,340,147

CLASS 250

208.1 6,340,812
216 6,340,813
292 6,340,814
318 6,340,815
338.3 6,340,816
341.6 6,340,817
370.13 6,340,818
374 6,340,819
484.4 6,340,820
548 6,340,821

CLASS 251

96 6,340,148
129.06 6,340,149
298 6,340,150

CLASS 252

301.45 6,340,436
373 6,340,437
387 6,340,438

CLASS 256

65 6,340,151

CLASS 257

25 6,340,822
48 6,340,823
99 6,340,824
207 6,340,825
292 6,340,826
310 6,340,827
321 6,340,828
347 6,340,829
350 6,340,830
461 6,340,831
532 6,340,832
536 6,340,833
538 6,340,834
6,340,835
544 6,340,836
666 6,340,837
668 6,340,838
672 6,340,839
6,340,840
700 6,340,841
724 6,340,842
758 6,340,843
774 6,340,844
777 6,340,845
783 6,340,846

CLASS 264

40.1 6,340,439
138 6,340,440
173.12 6,340,441
426 6,340,442
464 6,340,443

CLASS 266

87 6,340,444

CLASS 267

64.12 6,340,152
140.11 6,340,153

CLASS 269

246 6,340,154

CLASS 271

183 6,340,155
270 6,340,156
301 6,340,157

CLASS 273

138.1 6,340,158
272 6,340,159

CLASS 277

447 6,340,160
459 6,340,161
594 6,340,162

CLASS 279

147 6,340,163

CLASS 280

11.225 6,340,164
124.153 6,340,165
293 6,340,166
432 6,340,167
643 6,340,168
728.2 6,340,169
730.1 6,340,170
730.2 6,340,171
6,340,172
733 6,340,173
736 6,340,174
741 6,340,175
806 6,340,176
833 6,340,177

CLASS 281

45 6,340,178

CLASS 283

67 6,340,179
79 RE. 37,521

CLASS 285

319 6,340,180
321 6,340,181

CLASS 290

40 C 6,340,847

CLASS 292

102 6,340,182
175 6,340,183
259 R 6,340,184
339 6,340,185

CLASS 293

120 6,340,186
155 6,340,187

CLASS 294

19.2 6,340,188

CLASS 296

1.1 6,340,189
26.11 6,340,190
37.6 6,340,191
91 6,340,192
97.9 6,340,193
100.06 6,340,194
100.07 6,340,195
107.11 6,340,196
6,340,197
136 6,340,198
155 6,340,199
189 6,340,200
190.07 6,340,201
201 6,340,202
203.02 6,340,203
216.07 6,340,204

CLASS 297

24 6,340,205
216.14 6,340,206
258.1 6,340,207
322 6,340,208
478 6,340,209

CLASS 301

64.4 6,340,210

CLASS 303

146 RE. 37,522
191 6,340,211

CLASS 307

10.1 6,340,848
6,340,849
6,340,850
82 6,340,851
125 6,340,852

CLASS 310

61 6,340,853
90 6,340,854
90.5 6,340,855
156.22 6,340,856
156.53 6,340,857
328 6,340,858

CLASS 312

223.3 6,340,212
244 6,340,213
246 6,340,214

CLASS 313

309 6,340,859
311 6,340,860
318.07 6,340,861
484 6,340,862

CLASS 315

111.21 6,340,863
158 6,340,864
169.1 6,340,865
169.3 6,340,866
169.4 6,340,867
185 S 6,340,868
291 6,340,869
308 6,340,870
370 6,340,871

CLASS 318

9 6,340,872
254 6,340,873
471 6,340,874
568.11 6,340,875

CLASS 320

106 6,340,876
112 6,340,877
150 6,340,878
153 6,340,879
162 6,340,880

CLASS 323

282 6,340,881
315 6,340,882

CLASS 324

76.78 6,340,883
207.21 6,340,884
210 6,340,885
252 6,340,886
309 6,340,887
319 6,340,888
433 6,340,889
536 6,340,890
551 6,340,891
640 6,340,892
754 6,340,893
755 6,340,894
6,340,895
6,340,896

CLASS 326

40 6,340,897
49 6,340,898
115 6,340,899

CLASS 327

3 6,340,900
19 6,340,901
77 6,340,902
94 6,340,903
156 6,340,904
161 6,340,905
198 6,340,906
206 6,340,907
238 6,340,908
246 6,340,909
296 6,340,910
333 6,340,911
506 6,340,912
552 6,340,913

CLASS 330

52 6,340,914
6,340,915
69 6,340,916
149 6,340,917
292 6,340,918

CLASS 331

78 6,340,919
116 FE 6,340,920

CLASS 333

134 6,340,921
208 6,340,922

CLASS 335

4 6,340,923
151 6,340,924
172 6,340,925

CLASS 337

407 6,340,926

CLASS 338

59 6,340,927

CLASS 340

436 6,340,928
447 6,340,929
6,340,930
572.1 6,340,931
572.7 6,340,932
687 6,340,933
928 6,340,934
932.2 6,340,935
944 6,340,936

CLASS 341

23 6,340,937
58 6,340,938
136 6,340,939
143 6,340,940
155 6,340,941
158 6,340,942
161 6,340,943
6,340,944
172 6,340,945

CLASS 342

26 6,340,946
357.01 6,340,947
373 6,340,948
6,340,949

CLASS 343

700 MS 6,340,950
6,340,951
741 6,340,952
776 6,340,953
895 6,340,954
6,340,955
915 6,340,956

CLASS 345

1.3 6,340,957
2 6,340,958
3.1 6,340,959
60 6,340,960
63 6,340,961
75.2 6,340,962
92 6,340,963
100 6,340,964
107 6,340,965
163 6,340,966
179 6,340,967
211 6,340,968
6,340,969
213 6,340,970
327 6,340,971
426 6,340,972
534 6,340,973
584 6,340,974
590 6,340,975
690 6,340,976
709 6,340,977
764 6,340,978
6,340,979
776 6,340,980
863 6,340,981

CLASS 347

4 6,340,215
21 6,340,216
23 6,340,217
33 6,340,218
6,340,219
35 6,340,220
37 6,340,221
54 6,340,222
56 6,340,223
70 6,340,224
102 6,340,225
130 6,340,982
131 6,340,983
139 6,340,984
212 6,340,985
249 6,340,986

CLASS 348

13 6,340,987
180 6,340,988
246 6,340,989
448 6,340,990
513 6,340,991
556 6,340,992
572 6,340,993
625 6,340,994
626 6,340,995
675 6,340,996
731 6,340,997

CLASS 349

48 6,340,998
63 6,340,999
93 6,341,000
96 6,341,001
119 6,341,002
141 6,341,003
6,341,004
149 6,341,005

CLASS 351

41 RE. 37,523
106 6,340,226
123 6,340,227
136 6,340,228
160 R 6,340,229

CLASS 353

31 6,340,230

CLASS 355

53 6,341,006
6,341,007
67 6,341,008
6,341,009
75 6,341,010
77 6,341,011

CLASS 356

3.04 6,341,012
139.09 6,341,013
152.1 6,341,014
517 6,341,015
603 6,341,016

CLASS 358

1.17 6,341,017
1.18 6,341,018
1.9 6,341,019
6,341,020

CLASS 359

124 6,341,021
6,341,022
6,341,023
130 6,341,024
6,341,025
161 6,341,026
163 6,341,027
211 6,341,028
212 6,341,029
216 6,341,030
237 6,341,031
337 6,341,032
337.2 6,341,033
341.41 6,341,034
363 6,341,035
368 6,341,036
393 6,341,037
487 6,341,038
578 6,341,039
584 6,341,040
591 6,341,041
618 6,341,042
625 6,341,043
725 6,341,044
872 6,340,231

CLASS 360

48 6,341,045
67 6,341,046
72.2 6,341,047
77.08 6,341,048
96.5 6,341,049
244.9 6,341,050
265.1 6,341,051
324.1 6,341,052
324.2 6,341,053

CLASS 361

66 6,341,054
81 6,341,055
312 6,341,056
502 6,341,057
6,341,058
685 6,341,059
6,341,060
687 6,341,061
6,341,062
690 6,341,063
695 6,341,064
704 6,341,065
707 6,341,066
719 6,341,067
736 6,341,068
737 6,341,069
760 6,341,070
767 6,341,071
825 6,341,072

CLASS 362

26 6,340,232
102 6,340,233
105 6,340,234
156 6,340,235
267 6,340,236
294 6,340,237
391 6,340,238
521 6,340,239

CLASS 363

21.02 6,341,073
21.04 6,341,074
21.2 6,341,075
56.12 6,341,076
60 6,341,077
98 6,341,078

CLASS 365

49 6,341,079
66 6,341,080
145 6,341,081
6,341,082
154 6,341,083
158 6,341,084
185.09 6,341,085
189.05 6,341,086
189.09 6,341,087
190 6,341,088
191 6,341,089
200 6,341,090
201 6,341,091
6,341,092
6,341,093
6,341,094
203 6,341,095
220 6,341,096
222 6,341,097
226 6,341,098
227 6,341,099
233 6,341,100

CLASS 366

25 6,340,240

CLASS 367

1 6,341,101

CLASS 368

210 6,340,241
278 6,340,242

CLASS 369

13 6,341,102
32 6,341,103
44.15 6,341,104
44.27 6,341,105
44.28 6,341,106
44.29 6,341,107
47.1 6,341,108
47.14 6,341,109
47.2 6,341,110
47.22 6,341,111
47.29 6,341,112
53.15 6,341,113
77.1 6,341,114
6,341,115
112.02 6,341,116
116 6,341,117
118 6,341,118
178 6,341,119
275.1 6,341,120
275.3 6,341,121
275.4 6,341,122

CLASS 370

210 6,341,123
335 6,341,124
6,341,125
351 6,341,126
352 6,341,127
6,341,128
354 6,341,129
389 6,341,130
395 6,341,131
397 6,341,132
401 6,341,133
412 6,341,134
419 6,341,135

CLASS 372

26 6,341,136
29.011 RE. 37,524
50 6,341,137
96 6,341,138
107 6,341,139

CLASS 374

24 6,340,243

CLASS 375

130 6,341,140
137 6,341,141
219 6,341,142
222 6,341,143
240.2 6,341,144
256 6,341,145
329 6,341,146
341 6,341,147
355 6,341,148
356 6,341,149

CLASS 376

159 6,341,150
305 6,341,151

CLASS 378

4 6,341,152
6,341,153
15 6,341,154
94 6,341,155
98.8 6,341,156
144 6,341,157

CLASS 379

6 6,341,158
22.03 6,341,159
88.13 6,341,160
142.01 6,341,161
221.09 6,341,162
449 6,341,163

CLASS 380

278 6,341,164

CLASS 381

23 6,341,165
103 6,341,166
407 6,341,167

CLASS 382

107 6,341,168
115 6,341,169
116 6,341,170
124 6,341,171
132 6,341,172
141 6,341,173
154 6,341,174
167 6,341,175
229 6,341,176
233 6,341,177
243 6,341,178
254 6,341,179
255 6,341,180
260 6,341,181
273 6,341,182
276 6,341,183

CLASS 384

462 6,340,244
492 6,340,245

CLASS 385

3 6,341,184
12 6,341,185
27 6,341,186
52 6,341,187
73 6,340,246
78 6,340,247
79 6,340,248
86 6,340,249
87 6,340,250
89 6,340,251
114 6,341,188
130 6,341,189
6,341,190
140 6,341,191

CLASS 386

52 6,341,192
65 6,341,193
80 6,341,194
83 6,341,195
95 6,341,196
6,341,197
98 6,341,198
6,341,199

CLASS 396

6 6,341,200

56 6,341,201
281 6,341,202
450 6,340,252
611 6,340,253

CLASS 399

49 6,341,203
53 6,341,204
101 6,341,205
103 6,341,206
149 6,341,207
237 6,341,208
6,341,209
262 6,341,210
330 6,341,211

CLASS 400

120.16 6,340,254
615.2 6,340,255
624 6,340,256

CLASS 401

42 6,340,257
87 6,340,258
198 6,340,259
202 6,340,260
216 6,340,261
224 6,340,262

CLASS 403

151 6,340,263
297 6,340,264
316 6,340,265
373 6,340,266

CLASS 404

2 6,340,267
6 6,340,268

CLASS 405

53 6,340,269
184.3 6,340,270
184.4 6,340,271
203 6,340,272
227 6,340,273

CLASS 407

34 6,340,274

CLASS 408

1 R 6,340,275
10 6,340,276

CLASS 411

416 6,340,277

CLASS 414

140.9 6,340,278
326 6,340,279
537 6,340,280
783 6,340,281
788.7 6,340,282

CLASS 415

60 6,340,283
115 6,340,284
116 6,340,285
173.3 6,340,286
199.1 6,340,287
6,340,288

CLASS 416

1 6,340,289
157 R 6,340,290
185 6,340,291
244 R 6,340,292

CLASS 417

307 6,340,293
395 6,340,294
470 6,340,295

CLASS 420

417 6,340,445
480 6,340,446

CLASS 422

5 6,340,447
82.11 6,340,448
307 6,340,449

CLASS 423

109 6,340,450
359 6,340,451
415.2 6,340,452
592 6,340,453
600 6,340,454

CLASS 424

9.81 6,340,455
45 RE. 37,525
48 6,340,456
93.4 6,340,457
94.64 6,340,458
154.1 6,340,459
184.1 6,340,460
193.1 6,340,461
199.1 6,340,462
263.1 6,340,463
280.1 6,340,464
400 6,340,465
401 6,340,466
405 6,340,467
6,340,468
438 6,340,469
439 6,340,470
6,340,471
448 6,340,472
451 6,340,473
464 6,340,474
469 6,340,475
6,340,476
488 6,340,477
489 6,340,478
725 6,340,479
728 6,340,480
736 6,340,481
6,340,482
754 6,340,483
761 6,340,484
776 6,340,485

CLASS 425

162 6,340,296
174.4 6,340,297

CLASS 426

2 6,340,486
231 6,340,487
302 6,340,488
489 6,340,489
518 6,340,490
554 6,340,491
557 6,340,492
599 6,340,493
640 6,340,494

CLASS 427

1 6,340,495
58 6,340,496
123 6,340,497
220 6,340,498
248.1 6,340,499
250 6,340,500
255.6 6,340,501
387 6,340,502
393.5 6,340,503
493 6,340,504
570 6,340,505

CLASS 428

1.26 6,340,506
4 6,340,507
34 6,340,508
34.7 6,340,509
36.1 6,340,510
36.91 6,340,511
42.2 6,340,512
95 6,340,513
159 6,340,514
192 6,340,515
195 6,340,516
6,340,517
215 6,340,518
327 6,340,519
332 6,340,520
336 6,340,521
359 6,340,522
364 RE. 37,526
6,340,523
6,340,524
6,340,525
391 6,340,526
402.2 6,340,527
412 6,340,528
432 6,340,529
474.4 6,340,530
516 6,340,531
523 6,340,532
611 6,340,533
626 6,340,534
650 6,340,535
660 6,340,536
690 6,340,537

CLASS 429

96 6,340,538
213 6,340,539

CLASS 430

1 6,340,540
5 6,340,541
6,340,542
6,340,543
7 6,340,544
6,340,545
18 6,340,546
22 6,340,547
58.45 6,340,548
111.4 6,340,549
138 6,340,550
192 6,340,551
270.1 6,340,552
6,340,553
6,340,554
270.13 6,340,555
296 6,340,556
316 6,340,557
320 6,340,558
331 6,340,559
455 6,340,560
503 6,340,561
599 6,340,562

CLASS 432

222 6,340,298

CLASS 433

80 6,340,299
174 6,340,300
216 6,340,301

CLASS 434

350 6,341,212

CLASS 435

6 6,340,563
6,340,564
6,340,565
6,340,566
6,340,567
6,340,568
7.2 6,340,569
6,340,570
7.33 6,340,571
8 6,340,572
18 6,340,573
69.1 6,340,574
6,340,575
6,340,576
69.7 6,340,577
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25 6,340,331
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114 6,340,715

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156 6,340,718
174 6,340,719

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328.5 6,340,733

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196 6,340,736
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6,340,738
310 6,340,739

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6,340,741
351 6,340,742
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24.1 6,340,748
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26.6 6,340,750

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490 6,340,752
543 6,340,753

CLASS 544

244 6,340,754
251 6,340,755
276 6,340,756
319 6,340,757
337 6,340,758
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239 6,340,761
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326 6,340,774
376 6,340,775
394 6,340,776
411 6,340,777
463 6,340,778
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177 6,340,781

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226 6,340,345
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388 6,341,229
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438 6,340,347
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CLASS 602

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27 6,340,355
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264 6,340,358
366 6,340,782
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90 6,340,363
200 6,340,364
205 6,340,365

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45 6,341,236
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1.13 6,340,366
1.34 6,340,367
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22.38 6,340,370

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3	6,341,247
4	6,341,248
13	6,341,249
	6,341,250
41	6,341,251
45	6,341,252
102	6,341,253
208	6,341,254
209	6,341,255

CLASS 702

19	6,341,256
27	6,341,257
56	6,341,258
117	6,341,259
186	6,341,260

CLASS 703

6	6,341,261
16	6,341,262

CLASS 704

239	6,341,263
255	6,341,264

CLASS 705

4	6,341,265
7	6,341,266
11	6,341,267
15	6,341,268
22	6,341,269
26	6,341,270
28	6,341,271
40	6,341,272
41	6,341,273
410	6,341,274

CLASS 706

33	6,341,275
50	6,341,276

CLASS 707

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3	6,341,279
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5	6,341,283
6	6,341,284
8	6,341,285
101	6,341,286
102	6,341,287
103 R	6,341,288
104	6,341,289
104.1	6,341,290
203	6,341,291
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206	6,341,293
501.1	6,341,294

CLASS 708

131	6,341,295
207	6,341,296
492	6,341,297
520	6,341,298
523	6,341,299
605	6,341,300

CLASS 709

100	6,341,301
	6,341,302
104	6,341,303
203	6,341,304
	6,341,305
217	6,341,306
220	6,341,307
223	6,341,308
	6,341,309
	6,341,310
226	6,341,311
227	6,341,312
	6,341,313
229	6,341,314
230	6,341,315
248	6,341,316

CLASS 710

15	6,341,317
23	6,341,318
52	6,341,319
101	6,341,320
104	6,341,321
129	6,341,322
	6,341,323
260	6,341,324

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3	6,341,325
104	6,341,326
108	6,341,327
112	6,341,328
	6,341,329
113	6,341,330
	6,341,331
	6,341,332
114	6,341,333
137	6,341,334
	6,341,335
144	6,341,336
146	6,341,337
147	6,341,338
148	6,341,339
150	6,341,340
162	6,341,341
166	6,341,342

CLASS 712

21	6,341,343
202	6,341,344
204	6,341,345
223	6,341,346
228	6,341,347
239	6,341,348

CLASS 713

168	6,341,349
176	6,341,350
201	6,341,351
	6,341,352
	6,341,353
324	6,341,354
501	6,341,355

CLASS 714

4	6,341,356
38	6,341,357
43	6,341,358
100	6,341,359
704	6,341,360
726	6,341,361
784	6,341,362

CLASS 716

6	6,341,363
7	6,341,364
8	6,341,365
11	6,341,366
16	6,341,367

CLASS 717

1	6,341,368
	6,341,369
5	6,341,370
	6,341,371
7	6,341,372
11	6,341,373

CLASS 725

43	6,341,374
100	6,341,375

CLASS 800

12	6,340,783
306	6,340,784
317.4	6,340,785
320.1	6,340,786

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D2—	704	452,985
		452,986
		452,987
	743	452,988
	918	452,989
	972	452,990
		452,991
		452,992
D3—	214	452,993
D4—	138	452,994
D6—	300	452,995
D7—	395	452,996
	679	452,997
D8—	341	452,998
	343	452,999
	397	453,000
D9—	305	453,001
	432	453,002
	502	453,003
	516	453,004
D10—	32	453,005
	126	453,006
D11—	90	453,007
	107	453,008
D12—	147	453,009
	174	453,010
	197	453,011
	209	453,012
		453,013
	319	453,014
D14—	205	453,015
	214	453,016
	253	453,017
	318	453,018
	348	453,019
	349	453,020
	371	453,021
	374	453,022
D15—	21	453,023
D16—	309	453,024
	315	453,025
D19—	32	453,026
	90	453,027
	93	453,028
D21—	329	453,029
		453,030
	442	453,031
	607	453,032
		453,033
	621	453,034
	662	453,035
	712	453,036
		453,037
D22—	113	453,038
D23—	228	453,039
	297	453,040
	367	453,041
	393	453,042
D24—	206	453,043
	220	453,044
D25—	124	453,045
	138	453,046
D26—	44	453,047
	87	453,048
	106	453,049
D27—	102	453,050
	134	453,051
	135	453,052
D28—	41	453,053
	76	453,054
D29—	101.4	453,055
	106	453,056
D34—	38	453,057

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P.—	118	12,360
	258	12,361
	318	12,369
		12,370
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	327	12,365
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